THE CATHOLIC UNIVERSITY OF AMERICA

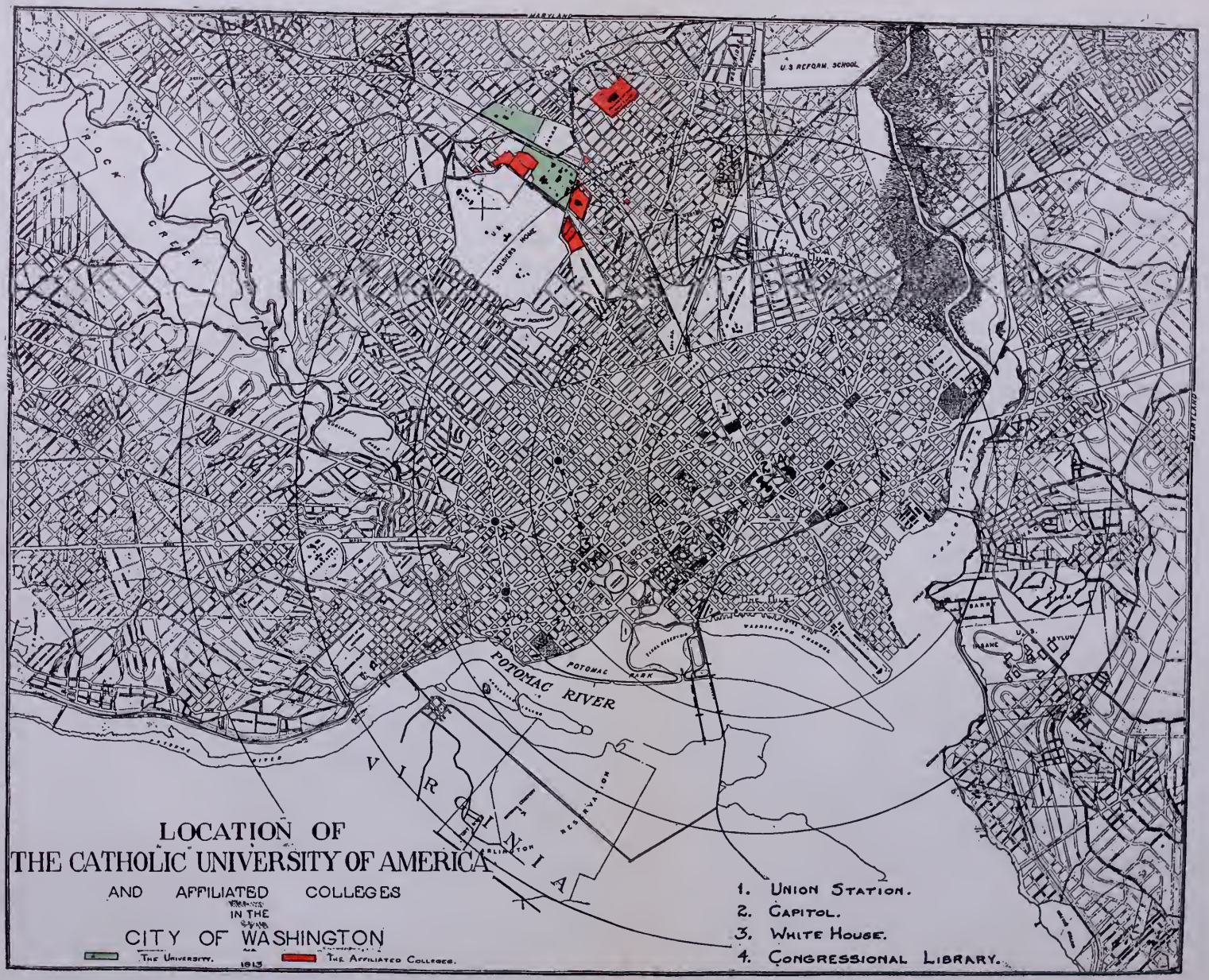
ANNOUNCEMENTS

OF

THE SCHOOL OF SCIENCES

1914-1915

WASHINGTON
Published by the University
1914



LOCATION OF THE CATHOLIC UNIVERSITY OF AMERICA AND AFFILIATED COLLEGES IN THE CITY OF WASHINGTON

The University. 1913 The Affiliated Colleges.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BROOKLAND AVE.
UNITED STATES SOLDIERS HOME GROUNDS
MICHIGAN AVE.
MONROE ST.
4TH ST.
LINCOLN AVE.
KEY TO NUMBERS
1 Caldwell Hall
2 McMahon Hall
3 Albert Hall
4 Engineering Building
5 Gibbons Hall
6 Gymnasium
7 Residence
8 Observatory
9 St. Thomas College
10 Apostolic Mission House
11 Marist College
12 Holy Cross College
13 College of the Immaculate Conception
14 University, B. & O. R. R. Station
15 Residence
16 Carpenter Shop
17 Tennis Courts
18 Handball Courts
19 Golf Course
20 St. Austin's College
21 College of the Holy Land
22 Trinity College
23 Greenhouse
24 Stables
25 Athletic Field
26 Marist Seminary
27 St. John Kantius Polish College
28 Dining Hall
29 Paulist College
THE CATHOLIC UNIVERSITY OF AMERICA
AREA 142.51 ACRES
1914
SCALE OF FEET

THE CATHOLIC UNIVERSITY OF AMERICA

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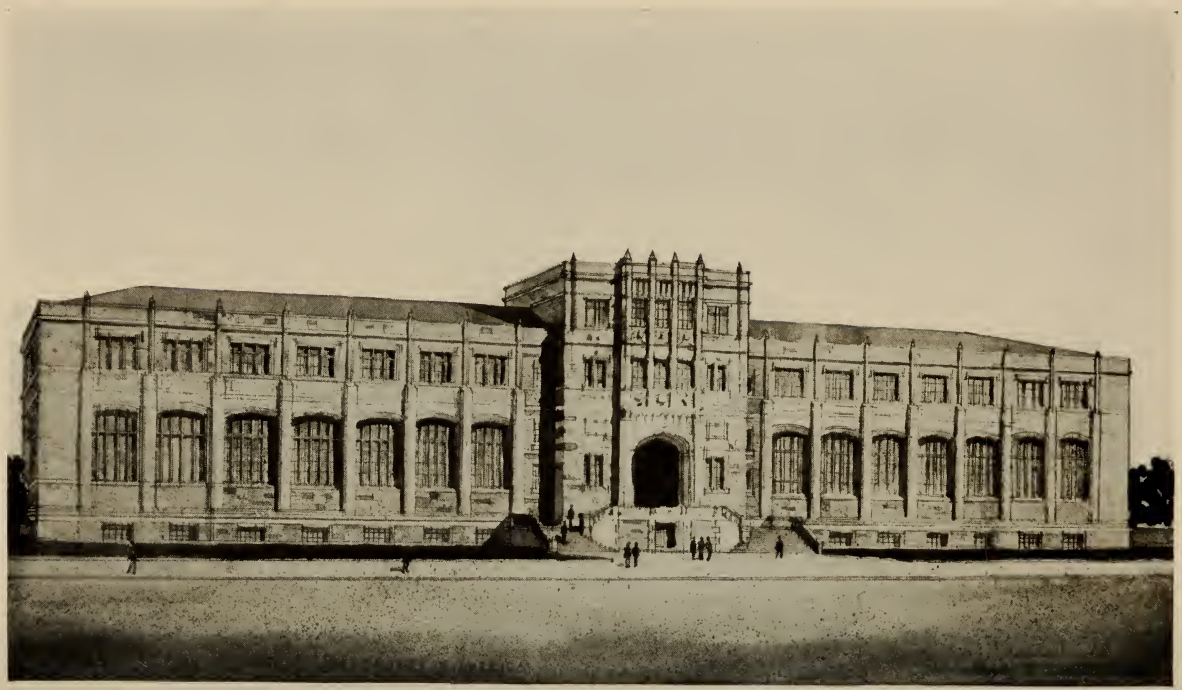
National Capital Press, Inc.
Book Manufacturers
Washington, D. C.



Chemical Laboratory (wing on the right to be completed, October, 1914)

1914

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CALENDAR

FALL TERM

1914

Sept.	29,	Tuesday.	Opening of the Academic Year, at 9 A. M. Registration begins, to continue three days.
Oct.	1,	Thursday.	Registration ends at 4 P. M.
Oct.	2,	Friday.	Lectures begin in all Schools of the University, at 9 A. M.
Oct.	4,	Sunday.	Mass of the Holy Ghost and solemn opening of the Academic year, at 10.30 A. M.
Nov.	7,	Saturday.	Mass for deceased benefactors, at 8.30 A. M.
Nov.	18,	Wednesday.	Stated meeting of the Board of Trustees.
Nov.	26,	Thursday.	Thanksgiving Day. Holiday.
Dec.	8,	Tuesday.	Patronal Feast of the University. Holiday.
Dec.	22,	Tuesday.	Christmas Recess begins at 5 P. M.

WINTER TERM

1915

Jan.	5,	Tuesday.	Lectures resumed at 9 A. M.
Jan.	25,	Monday.	Patronal Feast of the School of the Sacred Sciences. Holiday.
Jan.	26,	Tuesday.	Semi-annual examinations begin.
Feb.	3.	Wednesday	Semi-annual examinations end.
Feb.	19,	Friday.	Spiritual Retreat for all students of the University begins at 8 P. M., to end the following Sunday morning.
Feb.	22,	Monday.	Washington's Birthday.
March	7,	Sunday.	Patronal Feast of the School of Philosophy. Holiday.
March	30,	Tuesday.	Easter Recess begins at 5 P. M.

Graduates Hall (central section and towers on the left completed, June, 1914)

SPRING TERM

April	8,	Thursday.	Lectures resumed at 9 A. M.
April	14,	Wednesday.	Stated meeting of the Board of Trustees.
May	13,	Thursday.	Ascension Day. Holiday.
May	15,	Saturday.	Mass for living benefactors at 8.30 A. M.
May	30,	Sunday.	Memorial Day.
June	13,	Sunday.	Baccalaureate Sunday.
June	16,	Wednesday.	Graduation Day.

FALL TERM

Sept.	28,	Tuesday.	Registration begins, to continue three days.

The stated meetings of the Faculty of Sciences are at 12 o'clock, noon, on the last Monday of each month in the terms.

THE SCHOOL OF SCIENCES

THE FACULTY

His Eminence, James Cardinal Gibbons, *Chancellor of the University.*

Right Rev. Thomas Joseph Shahan, S.T.D., J.U.L., LL.D., *Rector of the University.*

Very Rev. John Joseph Griffin, Ph.D., *Vice-Dean; Patrick B. O'Brien Professor of Chemistry.*

Daniel William Shea, Ph.D., *Dean; John O'Brien Professor of Physics.*

Aubrey Edward Landry, Ph.D., *Secretary; Michael Cudahy Professor of Mathematics.*

George Francis Harbin, A.B., E.E., Diploma from the Westinghouse Electric and Manufacturing Company's Engineering Course, *Associate Professor of Electrical Engineering.*

John Bernard Parker, A.M., *Associate Professor of Biology.*

George Alphonsus Weschler, M.E., *Associate Professor of Mechanical Engineering.*

Alfred Doolittle, A.B., *Instructor in Astronomy.*

Louis Henry Crook, B.S., *Instructor in Mechanics.*

Frederick Vernon Murphy, Graduate of the École des Beaux Arts, Paris, *Instructor in Architecture.*

James Francis Connor, A.B., *Instructor in Mathematics.*

Anthony James Scullen, C.E., *Instructor in Civil Engineering.*

Otto Joseph Ramler, A.M., *Instructor in Mathematics.*

Aloysius John McGrail, A.B., *Instructor in Chemistry.*

Maurice Patrick Doran, C.E., *Instructor in Civil Engineering.*

John Joseph Widmayer, B.S. in Civil Engineering, *Instructor in Drawing.*

Albert Burnley Bibb, *Instructor in Architecture.*

Marion Xavier Wilberding, B.S. in Mechanical Engineering, *Instructor in Mechanical Engeering.*

Thomas Hackman Carter, B.S. in Electrical Engineering, *Instructor in Electrical Engineering.*

Knights of Columbus Fifty Thousand Dollar Check in Registrar's Office

Frank Xavier Burda, B.S. in Electrical Engineering, *Instructor in Physics.*

Harry Edward McCausland, B.S. in Civil Engineering, *Instructor in Civil Engineering.*

George J. Brilmyer, B.S., *Instructor in Biology.*

Charles Fox Borden, A.B., A.M., LL.B., *Registrar.*

GENERAL STATEMENT

HISTORY OF THE SCHOOL AND THE FACULTY OF SCIENCES

In April, 1906, the Board of Trustees grouped under the title "School of Sciences" several of the departments of pure and applied science which had existed under the Faculty of Philosophy since its inception in 1895, and created the "Faculty of Sciences," with the professors of the above referred to departments as its members. To this new Faculty is entrusted the training of young men for careers in sciences, engineering and the mechanical arts.

Some changes in departments have been made since 1906. The present list of departments in the School of Sciences is as follows:

The Department of Mathematics
The Department of Chemistry
The Department of Physics
The Department of Mechanics
The Department of Astronomy
The Department of Biology
The Department of Drawing
The Department of Architecture
The Department of Civil Engineering
The Department of Electrical Engineering
The Department of Mechanical Engineering

NEED OF SCIENTISTS AND ENGINEERS

A point has been reached in American industrial development where scientific method and scientifically trained men are needed as never before. From now on, industrial and commercial prog-

ress must depend more and more upon refinement in practice. In the attainment of such refinement, the knowledge and training which students have opportunity of obtaining in our libraries, lecture-rooms and laboratories, are fundamental and essential factors.

The varied knowledge now needed in the management of the industries of the country requires the scientist and engineer to be more or less specialists in one or more branches of the profession. Thus there are chemists, physicists; civil, electrical, mechanical, chemical engineers, etc. But the fields covered by the various branches overlap one another in so many different directions that it is impossible to determine sharply their boundaries.

There are already numerous opportunities afforded to young men of scientific or engineering training along the well known and clearly defined lines of technological activity. New fields are continually appearing, and the probabilities are that the supply of good men will not equal the technological demands for a long time to come.

LOCATION OF THE SCHOOL OF SCIENCES

Washington is admirably suited to be the seat of the School of Sciences of the Catholic University of America, for the City is in the van of progress in regard to the modern applications of science to human needs, having within its limits, or in its environs, numerous government libraries, museums, laboratories, and factories, which are accessible to investigators and students, under the terms of the following joint resolution of Congress, approved April 12, 1892:

"*Resolved by the Senate and House of Representatives of the United States of America in Congress assembled,* That the facilities for research and illustration in the following and any other governmental collections now existing or hereafter to be established in the city of Washington for the promotion of knowledge shall be accessible, under such rules and restrictions as the officers in charge of each collection may prescribe, subject to such authority as is now or may hereafter be permitted by law, to the scientific investigators and to students of any institution of higher educa-

McMahon Hall

tion now incorporated or hereafter to be incorporated under the laws of Congress or of the District of Columbia, to wit:

1. Of the Library of Congress.
2. Of the National Museum.
3. Of the Patent Office.
4. Of the Bureau of Education.
5. Of the Bureau of Ethnology.
6. Of the Army Medical Museum.
7. Of the Department of Agriculture.
8. Of the Fish Commission.
9. Of the Botanic Gardens.
10. Of the Coast and Geodetic Survey.
11. Of the Geological Survey.
12. Of the Naval Observatory."

Additional bureaus and laboratories are: The Weather Bureau with its extensive equipment for the study of meteorology; the Bureau of Standards which standardizes all measuring instruments, and makes exhaustive investigations in all physical and chemical problems relating to the production of standards; the Laboratory for the Marine Hospital and Public Health Service for the study of Bacteriology, Pathology, and Biochemistry. Besides the government institutions there are in Washington the great Carnegie Institution and the Carnegie Geophysical Laboratory. The steel and other factories of Baltimore, and the shipbuilding plants at Baltimore and Newport News, offer opportunities for tours of inspection.

The climate of Washington is excellent. Its beauty of situation, and its pleasant and healthful surroundings are widely known.

The University buildings in which the departments of science find location are picturesquely situated on the highlands near the northern limits of Washington, about three miles from the magnificent group of buildings on Capitol Hill. Most of the departments have commodious quarters in the McMahon Hall of Philosophy, Letters and Sciences. The Department of Chemistry will move from McMahon Hall, in the fall of 1914, into a

new building, the Chemical Laboratory, which is now in process of construction, according to plans that provide the most recent improvements and facilities for chemical research and instruction. The Departments of Electrical and Mechanical Engineering occupy Engineering Building which was constructed especially for these two departments, and for the central heating, lighting and power station of the University. The grounds consist of more than 142 acres, laid out with care and ornamented with trees and shrubs. There are several tennis courts and a field for base-ball, foot-ball and other out-door sports. There is also a small, temporary building fitted for indoor sports and general gymnasium exercises.

The Brookland cars of the Washington Railway and Electric Company pass the entrances to the grounds, at intervals of a few minutes.

METHOD IN THE SCHOOL OF SCIENCES

The system of instruction aims to equip the student with the scientific principles underlying his chosen field, and at the same time to train the reasoning faculties and to develop the power of applying abstract theory to practical operations so that he may be able to utilize in industrial fields the knowledge acquired in this school. Effort is made to awaken and stimulate initiative in students, to develop their individual capacity, and to lead them to use their energy effectively. Emphasis is laid upon the necessity of forming habits, character and associations which will make initiative, capacity and energy of permanent productive value.

The effort is made to ground the student so well in the principles of science and engineering that he will feel himself competent to attack intelligently any problem that may arise in his practice. It is characteristic of the scientific and engineering professions that the scientist and engineer never know what they may be called upon to do. New conditions suddenly arise, accidents occur. The scientist or engineer must decide quickly and accurately what is best to be done in an emergency, and then do it promptly and surely.

Engineering Building

DEPARTMENTS OF INSTRUCTION

THE DEPARTMENT OF MATHEMATICS

The courses in this Department are arranged to meet the needs, both of those students who are studying Mathematics as a valuable element in a scheme of liberal education, and especially of those for whom it forms a necessary foundation for work in pure Science or Engineering. For admission to its elementary courses a thorough knowledge of Algebra through quadratics, and of Plane Geometry, is required. The qualifications necessary for entrance to its advanced courses are stated in connection with the courses as hereinafter announced.

I. Advanced Algebra and Solid Geometry—This course is not open to students in the School of Sciences other than those pursuing the Bachelor of Arts Course preparatory to Medicine; it is intended for students in the other schools of the University. Students in the School of Sciences who have a condition in Solid Geometry on admission, and who are prevented by conflict from taking Course III are, however, required to take the second half of Course I. Lectures and problems, *M.*, *W.*, *F.*, 9-10.—Mr. Ramler.

II. Trigonometry, Advanced Algebra and Analytical Geometry.—(Solid Geometry required, or to be taken simultaneously.) Lectures and problems: *Section A*, *M.*, *W.*, *Th.*, *F.*, *S.*, 9-10; *Section B*, *M.*, *Tu.*, *Th.*, *F.*, *S.*, 12-1.—Mr. Connor and Mr. Ramler.

III. Solid Geometry and Trigonometry.—This course is intended as an alternative to Course I for first-year students in the other schools of the University. In addition, those students in the School of Sciences who have a condition in Solid Geometry on admission, are required unless there is conflict with other courses, to make up the subject during their first year by taking the first half of Course III. Lectures and problems, *M.*, *W.*, *F.*, 11-12.—Mr. Connor.

IV. Calculus.—Differential and Integral Calculus, elementary course. (Math. II required.) *Section A:* Lectures, *Tu.*, *Th.*, *S.*, 10-11; problems, *M.*, *W.*, 8-9; *Section B:* Lectures, *Tu.*, *Th.*, *S.*, 12-1; problems, *W.*, 10-11, *F.*, 12-1.—Mr. Connor and Mr. Ramler.

V. Calculus.—Differential and Integral Calculus, second course. (Math. IV required.) Lectures and problems, *M.*, *Tu.*, *W.*, *F.*, 11-12, *first half-year*.—Professor Landry.

VI. Advanced Calculus and Differential Equations.—(Math. V required.) Lectures and problems, 3 *hrs. a week*, *second half-year*.—Professor Landry.

VII. Elementary Theory of Functions.—(Math. V required.) Lectures and problems, 2 *hrs. a week*.—Professor Landry.

VIII. Introduction to Mathematical Physics.—The topics treated will be selected from the following list: Attraction; the potential function and Green's theorem; Fourier series; conjugate functions and Laplace's equation; Legendre's, Laplace's and Bessel's functions. Omitted in 1914-15.

IX. Higher Geometry.—(Math. V required.) Lectures and problems, 2 *hrs. a week*.—Professor Landry.

THE DEPARTMENT OF CHEMISTRY

The courses in Chemistry are organized with the general aim of exciting in the student a spirit of inquiry and of training him to the habit of persistent work, and of dealing intelligently and correctly with nature and its laws. In Chemistry, as in all other experimental sciences, progress consists in the discovery and classification of facts. Hence the student must be made acquainted with the methods of observation, and experimental facts, and the laws of Chemistry. From the very beginning of his course the greatest stress will be laid upon laboratory work; but lectures will be regularly given in General, Organic, Theoretical, and Physical Chemistry, and, from time to time, on selected topics.

Though the courses are primarily intended for those looking forward to a career as scientists or teachers, the instruction and training imparted in them is of equal importance and utility to the analyst, the practical and the technical chemist.

A liberal allowance of material and apparatus is permitted to each student, and excellent facilities for the production of special apparatus are at his disposal.

The courses of instruction offered in this Department com-

General Chemistry

mence with the rudiments of the science in order that the student may be properly prepared, both in knowledge and method of study, for profitable work in the more advanced courses.

Laboratory Fees.—The fee for those whose courses call for six hours of laboratory work per week is $20.00; for those who spend a greater time in the laboratory, $30.00. Laboratory fees are payable in advance. Ordinary chemicals are not charged for. Costly chemicals, and all apparatus in charge of the student, must be receipted for by him. The receipts are held by the custodian of apparatus till the time of settlement of accounts, when all apparatus not returned must be paid for.

I. General Chemistry.—This course is designed to illustrate the general laws and doctrines of Chemistry, leading the student, by observation of the fundamental facts of the science, to grasp the connection between these facts and the underlying principles. Prominence is also given to those principles of Physics which find application in chemical operations. The laboratory work in connection with this course includes the preparation from ores and other crude materials of a number of chemical compounds; the detailed study of these; practical proofs of chemical laws, and a thorough drilling in qualitative analysis. Lectures, *M.*, *W.*, *F.*, 10-11; laboratory: *Section A*, *M.*, *F.*, 2-5; *Section B*, *Tu.*, *Th.*, 2-5.—Professor Griffin, Mr. McGrail and assistants.

II. Organic Chemistry.—In this course the student is introduced to the study of compounds of carbon. The points of similarity and difference between organic and inorganic Chemistry are touched upon, then the most important members of the paraffin and aromatic series are studied in detail, and the development of this branch of Chemistry and its bearing upon chemical theory are considered.

In the laboratories the student is given practice in quantitative analysis, both inorganic and organic, more or less extensive, according to the needs of his future work. He studies the method of purification of organic compounds, the preparation and identification of typical substances, and such others as will familiarize him with the various methods of reduction, oxidation, nitrification, sulphonation, etc., on which the great chemical industries are based. Lectures, *M.*, *Th.*, *F.*, 9-10; laboratory, *M.*, *Th.*, 2-5.—Professor Griffin and Mr. ————————.

III. Quantitative Analysis.—This course comprises practical instruction in the most important methods of analysis, gravimetric, volumetric, electrolytic and organic. Lecture, 1 *hr. a week;* laboratory, 6 *hrs. a week.*—Mr. McGrail.

IV. Physical Chemistry.—Measurements of mass and volume, specific gravity, determinations of matter in its various states, the phase law and mass reactions, thermo-chemistry and calorimetry, osmotic pressure and the theory of solutions, theory and use of the spectroscope, polariscope and refractometer; theory of the voltaic cell, electro-chemical oxidation and reduction, storage batteries, deposition of metals, determination of conductivity of solutions. Lectures, 2 *hrs. a week;* laboratory, 6 *hrs. a week.*—Mr. McGrail.

V. Municipal Chemistry.—A course which deals with those problems of civic administration the solution of which require more or less expert chemical service. Water supply, sewage disposal, food inspection, combustibles, sanitation and like topics are discussed, and proper laboratory methods acquired. Lecture, 1 *hr. a week;* laboratory, 6 *hrs. a week.*—Professor Griffin.

VI. Water, Gas and Fuel Analysis.—Examination of water in reference to its potability and industrial uses; the analysis of air, flue gas and illuminating gas; the proximate analysis and calorific value of coal, and problems in industrial calculations. Lecture, 1 *hr. a week;* laboratory, 4 *hrs. a week.*—Mr. ————

VII. Industrial Chemistry.—The preparation of chemical products from raw materials. Methods of purification and testing. Economic factors in production, and the utilization of waste products. Lecture, 1 *hr. a week;* laboratory, 6 *hrs. a week.*—Professor Griffin.

VIII. Mineralogy, Metallurgy and Assaying.—The study and blowpipe analysis of the common minerals, fire assays of lead, silver and gold ores, the compounding of fluxes, the calculation of charges and examination of metallurgical processes. Lecture, *W.*, 12-1; laboratory, *W.*, 2-5.30.—Mr. ————

IX. Special Methods in Inorganic Chemistry. — This course is designed to broaden the training of the student in general chemistry. It consists of a series of practical exercises in the various types of chemical reactions, both in solution and

Organic Chemistry

in the furnace, the actual preparation of typical substances and a number of those of industrial importance, and such other work as tends to the amalgamation of theory and practice and the development of the student's originality and resourcefulness. Lecture 1 *hr. a week;* laboratory, 6 *hrs. a week.* — PROFESSOR GRIFFIN.

X. SEMINAR.—The formation of the reading habit is essential to the working chemist, and for this end the instructors and advanced students will meet once a week for the examination and discussion of the important papers appearing in current chemical literature, and to listen to reports, prepared by members of the class, on the developments of chemical work.—PROFESSOR GRIFFIN.

XI. ADVANCED WORK.—This course will consist of a detailed study of some of the classical pieces of work which have been of epoch-making influence, or of great theoretical importance. In addition, the formation of the reading habit, so essential to the success of the working chemist, will be encouraged, and for the furtherance of this object the student will be required to summarize from the original papers the important phases of chemical development. The chemical library is very well equipped for this work. It is rich in complete series of the most important periodicals and in all the current periodical literature of the science. The student will find a reading knowledge of French and German necessary at this stage of his work.

In the laboratory the student will undertake the preparation of the more difficult chemical compounds and the study of complex reactions; after which the research work, upon the result of which his thesis for the doctorate is based, will be undertaken.—PROFESSOR GRIFFIN.

XX. THESIS.—All candidates for the degree Bachelor of Science in Chemical Engineering will be required to prepare a thesis on some subject approved by the Director of the Laboratory. Laboratory and library work, 6 *hrs. a week.*—PROFESSOR GRIFFIN.

THE CHEMICAL LABORATORY, LIBRARY AND MUSEUM

Ample facilities are provided for extensive laboratory work in any of the courses. The Chemical Museum affords opportunity for the study of ores and metals and the crude and refined products of chemical industry.

Arrangements have been made far the temporary accommodation of the Chemical Department in the east wing of McMahon Hall. On the third floor are situated the laboratories.

The laboratory of General Chemistry occupies the northeast corner of this story. Its floor dimensions are 40 x 30 feet. The height ranges from 17 feet at the sides to 30 feet in the center. The room is well lighted from windows on two sides, and it provides ample accommodations for thirty-six students. The Analytical laboratory is of the same dimensions as the laboratory of General Chemistry, and is fitted up for twenty-four students. The working tables are supplied with water, gas, suction, and electricity. The blast burners, in this and in the other laboratories, are supplied with air under pressure by an air pump in the basement. The Organic laboratory is 40 x 25 feet. Especial care has been taken in fitting up this laboratory to provide the advanced worker with all the most recent time-saving devices and conveniences. Each table is provided with taps for gas, water, steam and suction. Within easy access of every working place there is a large sink. The hood-room is ample, being equal to the table-room. At the end of the corridor is the balance-room, the balances being on slate shelves, bracketed to the masonry walls of the building.

No efforts have been spared in making the library of the Department so complete that the research student can have easy access to all there is of standard chemical literature. Historical Chemistry is represented by the works of Kopp, Berthelot, Meyer, etc., and by many of the original papers of the eighteenth century chemists. The principal dictionaries: Beilstein, Ladenburg, Watt, and Thorpe, represented by the latest editions, and the larger treatises of Ostwald, Meyer and Jacobson, Dammer, Meyer, Roscoe and Schorlemmer, together with many lesser works, furnish the student with the latest ideas in theory and practice. A collection of 4,000 dissertations and monographs, with a card cata-

General Physics

logue of the same, adds greatly to the efficiency of the library. The library is especially rich in periodical literature, possessing complete sets of the following journals: Annales de Chimie et de Physique, Journal für Praktische Chemie, Annalen der Chemie (Liebig), Journal of the Chemical Society (London), Bulletin de la Société Chimique de Paris, Berichte der Deutschen Chemischen Gesellshaft, Zeitschrift für Analytische Chemie, Zeitschrift für Anorganische Chemie, The Chemical News (London), Elektrochemische Zeitschrift, Zeitschrift für Elektrochemie, Chemisches Central Blatt, Monatshefte für Chemie, The American Chemical Journal, Zeitschrift für Physikalische Chemie, Recueil des Travaux Chimiques des Pays-Bas, Hoppe-Seyler's Zeitschrift für Physiologische Chemie, The Journal of the American Chemical Society, The Journal of Physical Chemistry, Moniteur Scientifique Quesneville, Zeitschrift für Angewandte Chemie, Jahresberichte über die Fortschritte der Chemie, Gazetta Chimica Italiana, Revue Générale de Chimie Pure et Appliquée.

The lecture-room is on the fourth floor of the central portion of the building. On this floor also are the Chemical Museum, the apparatus-office, rooms for photographic work, and the distilled-water apparatus.

The Chemical Museum contains collections which serve to illustrate inorganic and organic chemistry. In it are found, in well arranged cases, the various ores from which the metals are obtained, and the latter in various stages of refinement; typical compounds prepared by students working in the laboratories; and a very large collection of samples of the crude and refined products of chemical industry received from manufacturing chemists in all parts of the United States and Europe.

THE DEPARTMENT OF PHYSICS

This Department furnishes opportunity for instruction and research in the various branches of Physics. Its purpose is twofold: (1) To give students of any other Department of the University such an acquaintance with the principles and facts of Physics and with the methods of exact physical measurements, as may be deemed requisite for the intelligent pursuit of their

chief work; (2) To give students of this Department a comprehensive and exact knowledge of experimental and mathematical Physics and a training in the methods of research that will fit them to pursue original work.

Instruction is given by means of lectures, laboratory practice, seminars, and such other academic devices as may be deemed necessary. Every incentive and facility possible is offered for original work of the highest character. The Physical Laboratory provides good opportunity for regular laboratory work and original research.

The Government museums and institutions afford advantages for students in this Department. The library of the Department is supplied with the standard works of reference and with the principal periodicals concerning Physics.

There is a laboratory fee of $10.00 for each of the courses I, II, IV, and VI.

I. General Theoretical and Experimental Physics.—Mechanics, Sound, Light, Heat, Electricity and Magnetism. Lectures with demonstrations. Measurements of the principal physical quantities in the laboratory. (Math. I, II or III required.) Lectures, *M.*, *W.*, *F.*, 11-12; laboratory: *Section A*, *Tu.*, 2-5; *Section B*, *W.*, 2-5.—Professor Shea, Mr. Burda and assistants.

II. Advanced Theoretical and Experimental Physics.—Mechanics, Sound, Light, Heat, Electricity and Magnetism. (Physics I required.) Lecture, *Tu.*, 11-12; laboratory, *M.*, 2-5.—Professor Shea and Assistants.

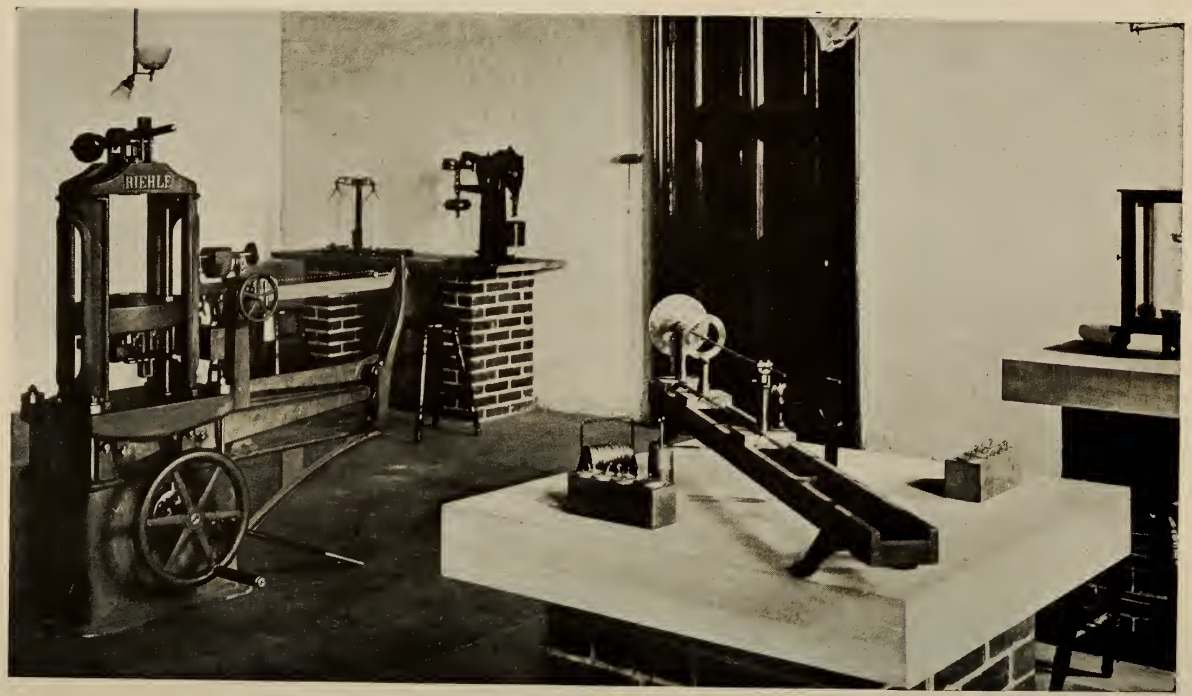
III. Mathematical Physics.—(Math. IV and Physics II required.) Lectures *M.*, *W.*, *F.*, 12-1.—Professor Shea.

IV. Research.—(Physics II or its equivalent required.)

The laboratory for research is always open to advanced students, and their work is under constant supervision. *M.*, *T.*, *W.*, *Th.*, *F.*, 9-5—Professor Shea.

V. Physical Seminar.—(Parts of Physics II and III and other qualifications to be determined for each applicant, required.) *F.*, 2-3.—Professor Shea.

VI. Magnetism and Electricity.—Parts of Magnetism, Electromagnetism, Electrodynamics, Electrostatics and Electrokinetics. Lectures. Measurements in the laboratory of magnetic



Applied Mechanics Laboratory

and electrical quantities. (Physics I and Math. IV required.) Lecture, *Th.*, 11-12; laboratory, *Th.*, 2-5.—Professor Shea and Mr. Burda.

The Physical Laboratory occupies several rooms on the first floor and in the basement of McMahon Hall, all pleasantly located and supplied with gas, water, steam, electricity, blast and vacuum connections, and other conveniences for rapid and satisfactory work. The equipment, which is already considerable, represents the best productions of the leading instrument makers of the world. Additions are being made as rapidly as needed. A large workshop supplied with electric power, machines and tools, gives excellent opportunity for the quick manufacture of special pieces of apparatus.

THE DEPARTMENT OF MECHANICS

The work of this department embraces both theoretical and experimental Mechanics. The theoretical instruction requires no previous knowledge of Mechanics; the advanced courses presume a fair acquaintance with Physics and sufficient mathematical training to read profitably the standard works on Mechanics.

The laboratory is supplied with motive power, compressed air, and vacuum pipes, gas, water, etc. The equipment includes: one 20,000 lb. Riehle testing machine; one 2,000 lb. Fairbanks cement testing machine; several hand power testing machines; numerous instruments of precision.

There is a laboratory fee of $5.00 for course III.

I. Theoretical Mechanics.—A course designed to give the student a firm grasp of the fundamental principles of Mechanics. (Math. II required.) Lectures with demonstrations and problems: *Section A, Tu., Th., S.*, 10-11; *Section B, Tu., Th., S.*, 12-1. —Mr. Crook.

II. Analytic Mechanics.—This course treats general theoretical Mechanics in a more exhaustive way than course I. (Math. IV required.) Lectures and problems, 3 *hrs. a week.*—Mr. Crook.

III. Applied Mechanics.—A course in mechanics of materials, supplemented by numerous tests in the laboratory. (Math.

IV and Mech. I required.) Lectures, *Tu.*, *Th.*, *S.*, 9-10; laboratory, *F.*, 2-4.—Mr. Crook.

THE DEPARTMENT OF ASTRONOMY

This department has been opened in connection with the operation of the Astronomical Observatory of the University for the training of students in theoretical and practical Astronomy.

I. Astronomy for Engineers. (Math. I or II and Physics I required.) Lectures, *M.*, *W.*, 10-11, *S.*, 11-12; observations at the Observatory, *one evening a week, first half-year.*—Mr. Doolittle.

II. Practical Astronomy.—This course is designed primarily for students who are taking Civil Engineering. It comprises: the methods of determining time, latitude and azimuth by means of the engineer's transit and the sextant; the art of computation. (Astron. I and Math. IV required.) Lectures, *M.*, *W.*, 10-11, *F.*, 8-9, *S.*, 11-12; periods for field work, at times to be agreed upon with the Instructor, *second half-year.*—Mr. Doolittle.

III. Descriptive Astronomy.—This course is intended for students wishing to acquire a knowledge of the general principles of Astronomy. No Mathematics is required beyond Elementary Geometry. Lectures and observatory work. Hours will be arranged later.—Mr. Doolittle.

IV. Orbit Computation. (Astronomy II and Math. V required.) *Second half-year.*—Mr. Doolittle.

Students desiring to take up special work in Practical Astronomy will arrange with the instructor.

THE DEPARTMENT OF BIOLOGY

This department aims to provide an adequate opportunity for the general student to acquire a knowledge of those broad and fundamental principles of biology, familiarity with which is coming to be regarded as a necessary part of a liberal education; to offer courses required by those who desire to prepare for the study of medicine or to specialize in psychology or philosophy; and to

Astronomical Observatory and Practical Astronomy Group

furnish facilities for those that desire to pursue special work along biological lines. The equipment of the laboratories include an ample outfit of good microscopes, suitable for class-work and for special investigation, incubators, sterilizers, paraffin and celloidin imbedding apparatus, microtomes, stains and reagents, and apparatus for drawing, photography and photomicrography.

The Herbarium of the University, though not among the largest, is second to none, in the possession of any institution of importance, as regards North American Botany. It has been augmented by large purchases of Mexican, South American and Polynesian plants, and extensive exchanges with European botanists, and has been further enriched by the gift of the Rev. Father Langlois' large collection, and by a considerable part of that amassed by the late Rev. J. H. Wibbe.

The National Zoological and Botanical Gardens, Museums and collections, Library of Congress and other libraries under government control, all of which are accessible to the students of the university, afford those in this department opportunities that are elsewhere unexcelled.

There is a laboratory fee of $10 each for courses I and VIII; and of $5 each for each of the courses II, III, IV, V and VII.

I. General Biology.—This course or its equivalent is prerequisite to all other courses offered by the department. Its purpose is to give the student an insight into the fundamental processes of life as manifested by animals and plants and to acquaint him with their structures, development and relationship to one another. The work is offered in two parts: *first half-year*, animal biology; *second half-year*, plant biology. In the former the laboratory work comprises a study of selected types of animals from the protozoa to the vertebrates; in the latter, types of plants from the unicellular forms to the pteridophytes. Lectures, *M.*, *W.*, *F.*, 10-11; laboratory, *Tu.*, *F.*, 2-4.—Associate Professor Parker.

II. Vertebrate Anatomy.—A comparative study of the anatomy of selected types of vertebrate animals. Lecture, *Tu.*, 10-11; laboratory, *Tu.*, *F.*, 2-5, *first half-year*.—Mr. Brilmyer.

III. Histology.—A course designed to give the student a practical knowledge of the minute structure of animal tissues

and to familiarize him with laboratory technique. Each student will be required to prepare his own mounts of the various tissues for study. Lecture, *Tu.*, 10-11; laboratory, *Tu.*, *F.*, 2-5, *second half-year*.—Mr. Brilmyer.

IV. Plant Morphology.—In this course the student will continue the study of morphology begun in the course in general biology. The work will be largely with the spermatophytes. Lecture, *W.*, 11-12; laboratory, *M.*, *W.*, 2-4, *first half-year*.—Associate Professor Parker.

V. Plant Histology and Physiology.—An elementary survey of the histology and physiology of the higher plants. Lecture, *W.*, 11-12; laboratory, *M.*, *W.*, 2-4, *second half-year*.—Associate Professor Parker.

VI. Physiology.—A course of lectures on human physiology intended for students that expect to study medicine. Lectures, *M.*, *W.*, *F.*, 9-10, *first half-year*.—Mr. Brilmyer.

VII. Bacteriology.—This course, which will treat of only non-pathogenic forms, is intended to acquaint the student with the structure and life activities of bacteria and to give him a working knowledge of bacteriological methods. (Biology III or V required.) Lecture, *W.*, 9-10; laboratory, *Th.*, 2-5, *second half-year*.—Mr. ————

VIII. Embryology.—Vertebrate embryology. Lecture, *Tu.*, 11-12; laboratory, *M.*, *W.*, 2-4.—Mr. Brilmyer.

IX. Special Investigations.—Open to advanced students; the character of the work and the time to be determined.—Associate Professor Parker.

THE DEPARTMENT OF DRAWING

The courses in Drawing have been established to supply the needs not only of those students who are following prescribed courses of study leading to professional careers, but also of those who follow courses in drawing for the training and culture derived therefrom. The work begins with the elements of drafting, and it is planned to develop the student along both theoretical and practical lines.

I. Mechanical Drawing.—Use of instruments; line shading;

Descriptive Geometry

problems in geometrical drawing; orthographic and isometric projection; sketching and lettering; tracing and blue-printing. Lecture, *Th.*, 11-12; drafting: *Section A*, *W.*, 2-5.30, *S.*, 11-1; *Section B*, *M.*, 2-5.30, *F.*, 8-10; *first half-year.*—Mr. Widmayer.

II. Machine Drawing.—Working drawings of machines and structures; subjects to be chosen with a view to the student's professional course. (Drawing I required.) Drafting: *Section B*, *M.*, 2-6; *Section A*, *W.*, 2-6; *second half-year.*—Mr. Widmayer.

III. Freehand Drawing.—Construction of titles; sketches of objects with a view to the practical either in projection or perspective. (Drawing I required.) Drafting, *Th.*, 11-12, *second half-year.*—Mr. Widmayer.

IV. Descriptive Geometry.—Elementary principles; problems relating to the point, line and plane; intersection of planes and solids; intersection of solids; development of surfaces. (Drawing I required.) Lectures, *Tu.*, *S.*, 9-10; drafting: *Section A*, *Th.*, 2-5.30; *Section B*, *F.*, 2-5.30; *first half-year.*—Mr. Widmayer.

VII. Topographic Drawing.—Topographic conventional signs, contours, maps. (Drawing I required.) Drafting: *Section A*, *W.*, 2-6; *Section B*, *M.*, 2-6, *second half-year.*—Mr. Widmayer.

THE DEPARTMENT OF ARCHITECTURE

The courses in Architecture are organized to supply the preliminary training required for the practice of architecture. Beginning with drawing, they lead through design, history, and construction, history of art and civilization, and landscape architecture, enabling the student to take immediate advantage of office opportunities on graduation.

The general course of four years, leading to the degree of Bachelor of Science in Architecture, includes all the essentials of a sound professional training, coupled with a liberal general education such as will equip the student for the many and increasing demands that will be made upon him as an architect.

A special course of two years, leading to a certificate of proficiency in architecture, is arranged to meet the needs of students who have had sufficient preliminary training to warrant taking up

the various technical subjects given under the general course. It includes all subjects directly related to the practice of architecture, such as freehand and architectural drawing, water colors and rendering, the Five Orders, design, architectural history and construction, the history of art and civilization, and landscape architecture.

I. Architectural Drawing.—Beginning with descriptive geometry and orthographic projection, the student takes up shades and shadows, perspective and stereotomy, developing in connection with the study of these subjects the skill necessary to make careful and accurate drawings, illustrations architectural in character being given to familiarize the student with the first principles. Lecture, *Tu.*, 11-12; drawing, 1 *hr. a week.*—Mr. Murphy.

II. Freehand Drawing.—The value of a thorough course in freehand drawing as a foundation for artistic expression causes unusual attention to be paid to it. First, objects of simple geometric forms are studied which involve the laws and expression of forms in line, light and shade, composition of simple masses and linear perspective. Then decoration, natural and architectural forms are taken up, and facility and accurate representation are gradually developed. After a satisfactory completion of this work the figures will be studied from casts, and, later, from the living model. Outdoor sketching, as an adjunct to the class room work, will be carried on whenever the weather permits, and is recommended for the summer months. Drawing, *M.*, 10-11, *W.*, 8-9, and 3 *hrs. additional a week.*—Mr. Bibb.

III. Water Color and Rendering.—Pencil, charcoal and monochrome washes are used as mediums of expression. Painting from still life is given to enable rendering to be taken up intelligently, and the theory and use of color to be worked out. Lecture, *W.*, 11-12, *first half-year.*—Mr. Murphy.

IV. Design.—The Five Orders form a natural basis for beginning the work of design. After the study of the best Greek and Roman examples, small sketch problems are given out involving an application of the orders, and are required to be rendered. These problems are exhibited and criticized before the whole class to enable individual students to profit by the work of the others.

Junior-Senior Civil Engineers

Sketch problems to be completed in one day compel the concentration of ideas. The work is carefully graded to develop a spirit of emulation from the very beginning. Problems of larger importance succeed the elementary studies, and plan projets requiring most serious consideration are the ultimate object of the course. Lectures, *M.*, 11-12, *F.*, 8-9; problems, 6 *hrs. a week.*—Mr. Murphy.

V. Architectural History.—To enable the student to grasp the essentials of the great styles, stereopticon lectures accompanied by problems in archaeology are given. Many of the important buildings of the world are critically studied and compared, and the decorative sculpture, historic ornament and arrangement in plan in each case analyzed. Lectures, *M.*, *Tu.*, 8-9; drawing, 1 *hr. a week.*—Mr. Bibb.

VI. Construction.—Strength and resistance of materials, structural design, building materials, heating and ventilating, sanitation and illumination are studied by means of lectures, textbooks and visits to buildings in process of erection; at the same time, the student is trained, by the preparation of working drawings, in the fundamentals of sound construction. Lecture, *F.*, 11-12; drawing, 1 *hr. a week.*—Mr. Murphy.

VII. Landscape Architecture.—Mr. Murphy.

VIII. History of Civilization and Art.—Mr. Bibb.

Each of the courses II, IV, V, and VI extends over two or more years.

THE DEPARTMENT OF CIVIL ENGINEERING

The course of studies, both preparatory and professional, has been outlined with a view to laying a substantial foundation to meet the demands of modern engineering practice. Practice is combined with theory as much as possible in an engineering school. Frequent inspection trips are made to points of interest to the civil engineer. The City of Washington is well adapted to this purpose.

The program of studies given on pages 52 to 54 shows the subjects to be completed by the candidate for the degree of Bachelor of Science in Civil Engineering.

There is a fee of $5.00 for Courses I and IV.

I. Land and Topographical Surveying.—Use of chain, tape, compass, transit and level; computation and plotting from notes taken in the field. (Math. II and Drawing I required; Drawing IV to be taken simultaneously.) Lectures, *M.*, *W.*, *F.*, 9-10, and *Th.*, 8-10, *first half-year; M. W.*, *F.*, 9-10, and *Th.*, 8-9, *second half-year;* field work, *M.*, 2-5.30.—Mr. Doran and Mr. McCausland.

II. Higher Surveying.—Triangulation; precise, trigonometric and barometric leveling; stadia and plane-table. (C. E. I required.) Drafting and Computations, *Th.*, 11-1; field work, *W.*, 2-5.30.—Mr. Doran and Mr. McCausland.

III. Highway Engineering.—Location, construction and maintenance of roads, streets, and pavements. Laboratory: Solution of various problems met with in highway construction; testing of materials used in road construction. (C. E. IV must be taken simultaneously.) Lecture, *Tu.*, 2-3; Laboratory, *Tu.*, 3-5.30, *first half-year.*—Mr. McCausland.

IV. Railroad Surveying.—Problems and field practice in simple, compound, reverse and transition curves, turnouts and switches, cross-sectioning, staking-out and calculating earth-work quantities; location of a line with preparation of profiles and maps. (C. E. I and Math. IV required.) Lectures, *W.*, 12-1, *F.*, 10-11; field work, *Th.*, 2-5.30.—Mr. Scullen and Mr. McCausland.

V. Materials of Construction.—The physical characteristics of the materials of construction used by the engineer. *M.*, *F.*, 11-12, *second half-year.*—Mr. McCausland.

VI. Theory of Structures.—*First Course.* A study of the loads, reactions, shears, and moments acting upon simple structures. (Mech. III required, or to be taken simultaneously. C. E. V must be taken simultaneously by Civil Engineering students.) *Tu.*, *Th.*, *S.*, 10-11, *second half-year.*—Mr. Scullen and Mr. McCausland.

VII. Theory of Structures.—*Second Course.* Analysis by graphical and analytical methods of stresses in structures of various kinds. The subjects considered are: the simple beam, plate girders, roof and bridge trusses, trestles, earth-pressure, retaining walls, dams, and the more simple cases of continuous girders,

Topographical Survey Group

cantilevers and arches. (C. E. VI required.) *M.*, 10-11, *Tu.*, 11-12, *W.*, *F.*, 9-10.—Mr. Scullen.

VIII. Structural Design.—The computation and design of typical structures, such as a plate girder bridge, wooden roof truss or highway bridge, and a pin-connected or riveted bridge. (C. E. VII must be taken simultaneously.) *M.*, 11-1, *and* 2-5.30. —Mr. Scullen.

IX. Masonry Construction.—A study of the foundations for various structures. Earth foundations, pile-driving and pile foundations, sheet-piling and coffer-dam methods, pneumatic foundations and caisson work. Reinforced concrete. *Th.*, 2-5, *S.*, 11-12.—Mr. Doran.

X. Theoretical Hydraulics.—The principles of hydrostatic and hydrodynamic pressure; the flow of water through orifices and nozzles, over weirs, through pipes and open channels, and the losses from friction and other causes. (Mech. III required.) Lectures, *M.*, 12-1, *W.*, 11-12, *F.*, 12-1; Laboratory, *Tu.*, 2-5.30, *second half-year*.—Mr. Doran.

XI. Sanitary and Hydraulic Engineering.—Study of the relation of the water supply to the public health; purification and filtration; sewers and sewage disposal. (C. E. X required.) Lectures, *Tu.*, *S.*, 9-10, *W.*, 10-11, *F.*, 8-9, *first half-year*.—Mr. Doran.

XII. Railroad Engineering.—Maintenance of track and structures; economics of location, and the elements of operation; design of yards and station grounds and other practical problems. (C. E. IV required.) Lectures, *Tu.*, *S.*, 9-10, *W.*, 10-11, *F.*, 8-9; *second half-year*.—Mr. Scullen.

XX. Thesis.—A thesis on some civil engineering subject, approved by the head of the Department, is required of every candidate for the degree Bachelor of Science in Civil Engineering, 6 *hrs. a week, second half-year*.—Mr. Scullen and Mr. Doran.

THE DEPARTMENT OF ELECTRICAL ENGINEERING

The purpose of this Department is to prepare young men for work as electrical engineers.

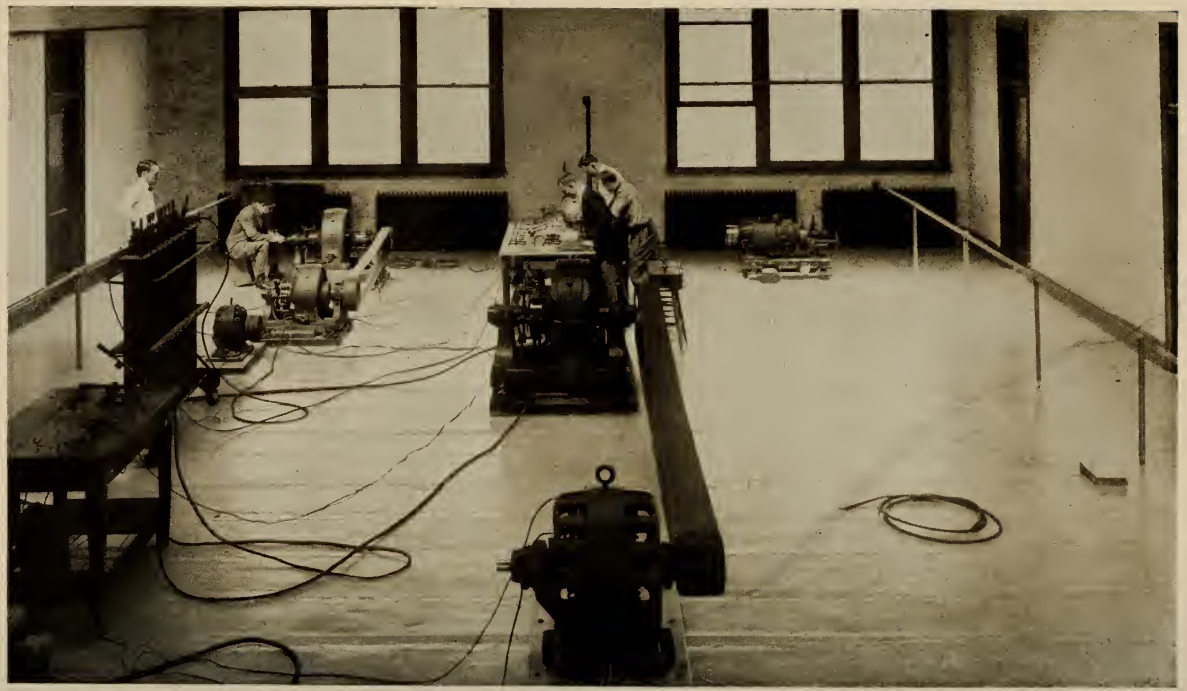
The instruction has always in view, for the student, thoroughness, the development of logical thinking and systematic methods

of work. Engineering is, for the most part, a practice in analytic and synthetic application requiring such qualities; if the student keeps this always in mind, he will have for his work a most helpful view-point. The courses of instruction are designed to keep those ideas before the student, and to make of him, not a storehouse of shifting technical facts, but rather a master of the basic principles of the science of Electrical Engineering.

The lecture rooms and laboratories of this Department occupy much of the second floor of Engineering Building, which has been erected recently to meet the needs of the Departments of Electrical and Mechanical Engineering, and the central heating, lighting and power station. Their nearness to this central station affords immediate power conveniences.

The equipment is extensive. The size of the apparatus is larger than that usually found in laboratories, and this has advantages that do not obtain with apparatus of low rating. This equipment includes: Two 20 K.W. compound wound generators; a 10-H.P. shunt wound motor; a 12½-H.P. shunt wound motor; a 10 K.W. series wound generator; a 10 K.W. rotary converter; a 30 K.W. A. C. generator, 3-phase; a 3½ K.W. compound wound motor-generator set; two 3 K. V. A. transformers; one .5 K. V. A. transformer; two 5-H.P. induction motors; ammeters, voltmeters, wattmeters, shunts and multipliers, for D. C. and A. C. work, of Weston, Westinghouse and General Electric manufacture, both portable and station types; starting and field rheostats, testing tables and such other adjunct apparatus as is necessary for thorough testing.

Washington and its vicinity offers for tours of inspection a varied assortment of electric power plants, large and small. The various forms of equipment and systems of distribution are represented, from the earlier belt drive to the latest turbine installation. In the spring, the fourth year students visit these plants and make a careful and critical study of each, thus gaining an intimate acquaintance with commercial practice, and broadening their knowledge in ways that will greatly benefit them. Among these plants are: The Garfield Park plant, supplying motor-generator sets in the Congressional group of buildings; the Potomac Light and Power Company's plant at Bennings, the old plant of



Electrical Testing Laboratory

the same company, and sub-stations for railway distribution; the Capital Traction Company's plant at Georgetown and its sub-stations; the Washington Terminal Company's plant at the Union Station; the United States Soldiers' Home plant; the United States Navy Yard plant; the Government Printing Office plant; the Washington Asylum plant; the Bureau of Standards; the Washington Post Office plant; the Municipal Building plant; the Great Falls and Old Dominion Railway Company's plant.

There is a laboratory fee of $10.00 for courses I and II in combination; and also for each of courses III and X.

I. Direct Current Machinery.—Fundamental principles of direct current generators and motors; practice in their operation and their testing according to the latest commercial practice. (Math. IV and Physics I required, and Physics VI must be taken simultaneously.) Lectures, *M.*, *W.*, *F.*, 10-11; laboratory, *M.*, *W.*, 2-5, *S.*, 11-1, *first half-year*.—Associate Professor Harbin and Mr. Carter.

II. Alternating Current Circuits.—The study of circuits made up of Resistance, Inductance and Capacity; phase relations; power factor of a circuit; the measurement of electromotive force, current and power, etc. (Math. IV and V and E. E. I required.) Lectures, *M.*, *W.*, *F.*, 10-11; laboratory, *M.*, *W.*, 2-5, *S.*, 11-1, *second half-year*.—Associate Professor Harbin and Mr. Carter.

III. Alternating Current Machinery.—Fundamental principles of alternating current generators, motors and transformers, and practice in their operation and testing. (Math. IV and V, E. E. I and II required.) Lectures, *Tu.*, *Th.*, *S.*, 9-10; laboratory, *M.*, *W.*, *F.*, 11-1.—Associate Professor Harbin and Mr. Carter.

IV. Design of Direct and Alternating Current Machinery.—A. Design of direct current generators and motors with calculations. (Drawing II and E. E. I required.) Lecture, *W.*, 9-10; drawing and computations, 3 *hrs. a week, first half-year*. B. Design of transformers, with calculations. (E. E. II and III required.) Lecture, *W.*, 9-10; drawing and computations, 3 *hrs. a week, second half-year*.—Associate Professor Harbin.

V. Primary and Secondary Batteries.—Theory and testing. (Chem. I and Physics I required.) Lecture, *S.*, 10-11; laboratory, *F.*, 10-12, *first half-year.*—Associate Professor Harbin.

VI. Electric Power Transmission and Distribution.—Principles and methods of transmitting and distributing power by direct and alternating currents. Lectures, computation and inspection, 2 *hrs. a week, second half-year.*—Mr. ————

VII. Telephone and Telegraph.—Theory and testing. (Physics I required.) Lectures, testing and inspection, 2 *hrs. a week, second half-year.*—Mr. ————

VIII. Electric Wiring of Buildings —Design and installation of direct and alternating systems. Lectures, computation and inspection, 2 *hrs. a week, first half-year.*—Associate Professor Harbin.

IX. Electric Railways.—Engineering preliminaries, equipment, construction and operation. Lectures and inspection, 2 *hrs. a week, first half-year.*—Associate Professor Harbin.

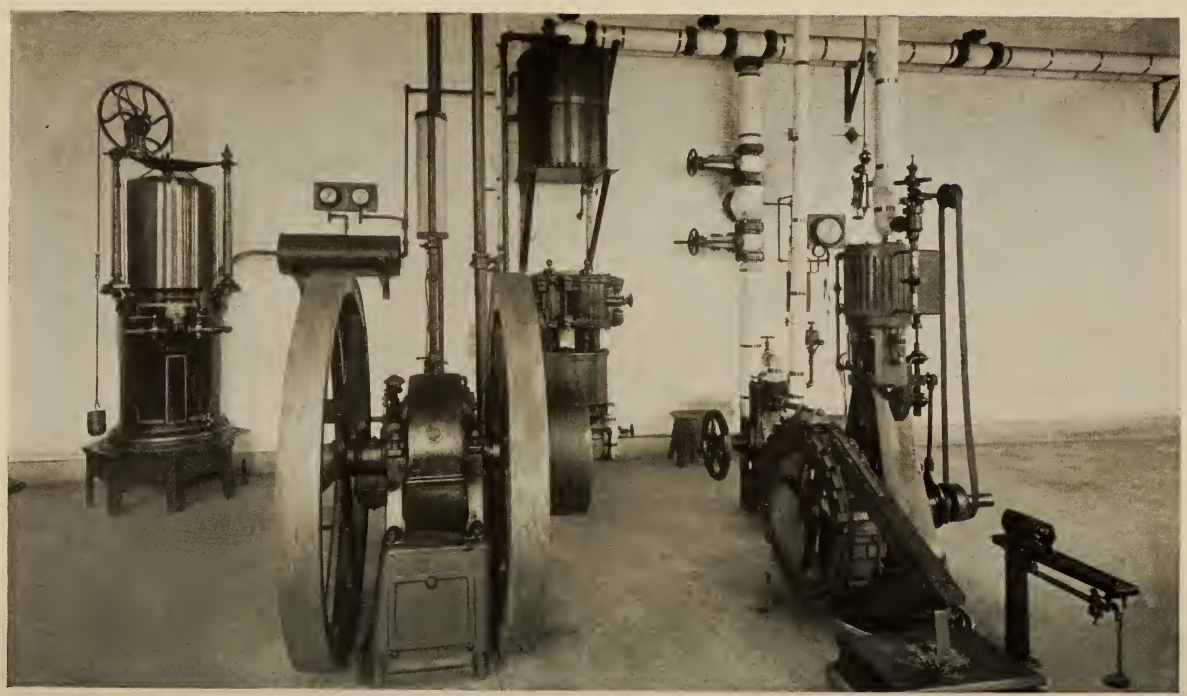
X. Direct and Alternating Current Machinery.—Fundamental principles, testing and practice in operation. This course is open only to students from the other departments who are in full fourth year standing. (Physics I required.) Lecture, *M.*, 9-10; laboratory, *Th.*, 11-1.—Associate Professor Harbin and Mr. Carter.

XI. Electric Power Plant Engineering.—The control of the generation and distribution of electrical energy, with lay-outs of typical plants and sub-stations. The study is along American engineering lines and is exclusively present-day practice, 2 *hrs. a week, second half-year.*—Associate Professor Harbin.

XII. Illumination Engineering.—The production, measurement and utilization of artificial illumination. Lecture, 1 *hr. a week;* laboratory, 2 *hrs. a week, first half-year.*—Mr. ————.

XX. Thesis.—A thesis on some electrical engineering subject, approved by the head of the Department, is required of every candidate for the degree of Bachelor of Science in Electrical Engineering. 4 *hrs. a week, second half-year.*—Associate Professor Harbin.

Note.—All students before being admitted to the laboratory must equip themselves with slide-rule, cutting-pliers, screw-driver, small wrench and speed counter.



Steam Engineering Laboratory

THE DEPARTMENT OF MECHANICAL ENGINEERING

The Department of Mechanical Engineering offers young men an opportunity to qualify themselves for practical careers in Mechanical Engineering. A thorough basic training is given in the design, construction, manufacture and operation of all classes of standard and special machinery, including the economic application, as well as the technical and executive management of manufacturing and transportation industries.

The steam and hydraulic laboratories are arranged so that they can be operated separately or as a unit; and may be run so as to include the central heating, lighting and power plant. There are three distinct laboratories; the steam and gas, the hydraulic and the refrigerating laboratories. The flexibility of these promote a large number of interesting and instructive experiments.

The laboratory equipment of the Department is as follows: One 4 ton refrigerating plant; three 200-H. P. Erie water-tube boilers, equipped with Roney stokers, high- andl ow-water alarms, and automatic feed-pumps and damper regulation; two 65-H. P. direct connected Skinner engines; 25-H. P. Erie Ball engine; 30-H. P. Buckeye engine; 10-H. P. DeLaval steam turbine direct connected to a 3 stage centrifugal pump; 10-H. P. vertical Troy engine; 5-H. P. two-cylinder Buffalo Forge engine; 9½-H. P. Otto gas- and gasoline engine; 15-H. P. Vertical fire-tube boiler; air-compressor; New York air-brake equipment; two large and two small vacuum steam pumps; one large and three small steam pumps; prony-brakes; steam injectors; calorimeters; square inch testers; vacuum testing apparatus; planimeters; steam indicators; stand-pipe and tanks containing different shaped weirs; gas meter tester and other necessary apparatus.

There is a laboratory fee of $7.50 for each of the courses I, II, III, and IV, and $5.00 for each of the courses X, XI, XII, and XIII.

I. Pattern Shop.—Carpentry and joinery; wood turning and pattern making. Lecture, 1 *hr. a week;* practice, 6 *hrs. a week, first half-year.*—Mr. Wilberding and Mr. ————.

II. Foundry.—Moulding, mixing of metals and core making. Lectures; practice, 6 *hrs. a week, second half-year.*—Mr. Wilberding and Mr. ————.

III. Forge Shop.—Welding, tempering and forging. Lecture, 1 *hr. a week*, practice, 6 *hrs. a week*, *first half-year.*—Associate Professor Weschler and Mr. ————.

IV. Machine Shop.—Tool making; vise-work; use of machine tools and general construction and machine shop work. Lecture 1 *hr. a week*, practice, 6 *hrs. a week*, *second half-year.*—Associate Professor Weschler and Mr. ———.

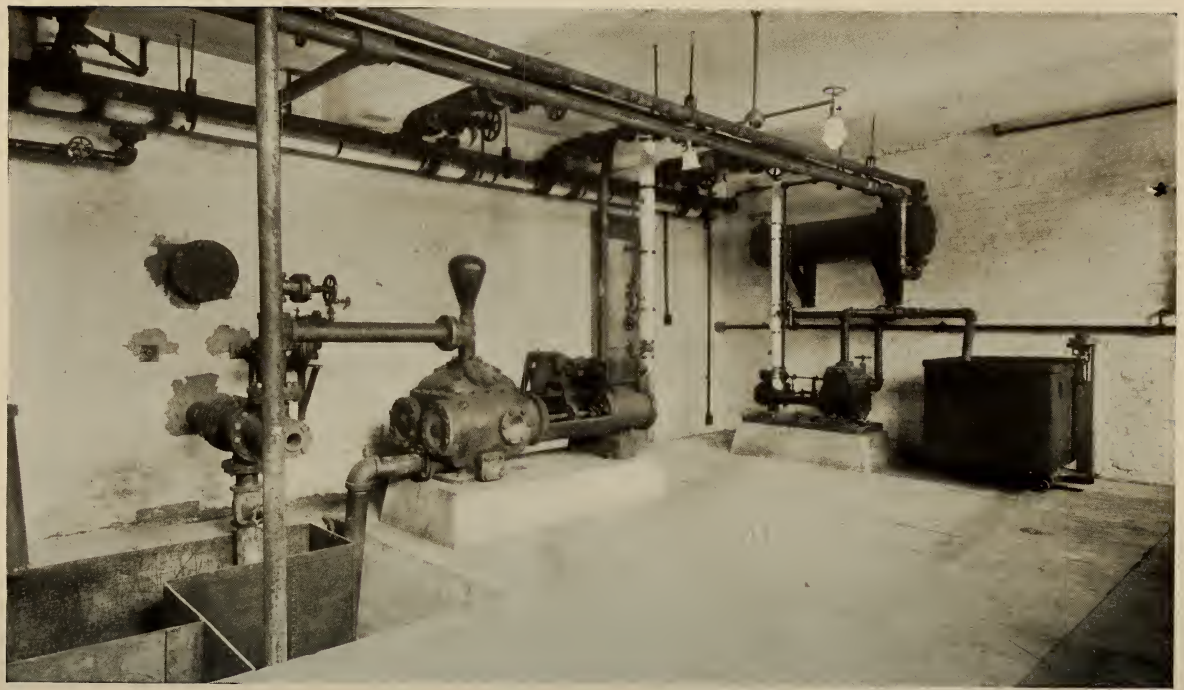
VII. Mechanism.—The communication of motion by gear-wheels, belts, cams, screws, and link-work; the various means of producing definite changes of velocity; the principles of epicyclic trains and parallel and quick return motions. (Physics I, Math. IV and Mech. I required.) Lectures, *Tu.*, *Th.*, *S.*, 10-11, *first half-year.*—Mr. Wilberding.

VIII. Machine Design.—Applied kinematics of machinery; application of Mechanics to calculation of machine parts; the development of working drawings for various machines under discussion. (Math. IV, Mech. I and Drawing IV required and M. E. VII, Math. V, and Mech. III must be taken simultaneously.) Lectures, *M.*, *Th.*, 2-3; drawing, *M* , *Th.*, 3-5.—Mr. Wilberding.

IX. Engines and Boilers.—Theory of the steam engine and its accessories; hot-air engines; gas and petroleum engines; water motors. The various forms of steam boilers, their advantages and disadvantages; furnace draft and heating surface; general pumping machinery. (Efficient use of slide rule is required.) This course is intended for Juniors in the departments of Mechanical, Civil, and Electrical Engineering. Lectures, *M.*, 11-12, *Tu.*, *Th.*, *S.*, 10-11, *second half-year.*—Mr. Wilberding.

X. Steam Engineering Laboratory.—The calibration of instruments; the application of indicators and reducing motions, and a detailed study of all testing and auxiliary apparatus in the mechanical and hydraulic engineering laboratories. (M. E. IX required, or to be taken simultaneously.) Laboratory, *F.*, 2-5, *second half-year.*—Associate Professor Weschler and Mr. Wilberding.

XI. Steam and Gas Engineering Laboratory.—Setting of slide valves; use of calorimeters for determining the quality of steam; determinations of the efficiencies of steam engines, pumps, injectors, and gas engines under varying conditions. (M. E. X required and M. E. XIV required, or to be taken simultaneously.)



Hydraulic Engineering Laboratory

Laboratory, *Tu., F.*, 2-5, *first half-year.*—Associate Professor Weschler and Mr. Wilberding.

XII. Hydraulic Engineering Laboratory.—Determination of the coefficients of the flow of water over weirs, through orifices and short tubes, and through nozzles. Determination of friction losses in pipes. Calibration of water meters. Efficiency tests on multi-stage centrifugal pumps, water turbines and reciprocating pumps. (M. E. IX and C. E. X required, or to be taken simultaneously.) Laboratory, *Tu.*, 2-5, *second half-year.*—Associate Professor Weschler and Mr. Wilberding.

XIII. Heating, Ventilating and Refrigerating Engineering Laboratory.—Tests of boilers, heating and lighting plants, and refrigerating machines. Determination of calorific values of liquid, solid, and gaseous fuels. (M. E. X and Chem. VIII required and M. E. XV required or must be taken simultaneously.) Laboratory, *F.*, 2-5, *second half-year.*—Associate Professor Weschler and Mr. Wilberding.

XIV. Thermodynamics.—*First Course.* This course embraces a study of thermal capacities, the laws of thermodynamics, the thermodynamics of gases, saturated vapors and superheated steam. The application of the laws of thermodynamics to steam engines is treated, and a study is made of steam engine economy by temperature analysis. (Math. V, Mech. III amd M. E. X required.) Lectures, *Tu., F., S.*, 11-12, *first half-year.*—Associate Professor Weschler.

XV. Thermodynamics.—*Second Course.*—Discussions of types and efficiencies of steam and gas engines, air compressors, and refrigerating machinery. (M. E. XI, M. E. XIV and Chem. VIII required.) Lectures, *Tu., F., S.*, 11-12, *second half-year.*—Associate Professor Weschler.

XVI. Engine and Power Plant Design.—Design of steam and internal combustion engines, boilers, auxiliaries, coal conveyors, exhaust steam heaters and economizers, stacks, and heating and ventilating equipment, (Mech. III, M. E. VIII, and IX required; M. E. XIV and XV must be taken simultaneously.) Lectures, *Tu., Th.*, 9-10; drawing, *M., Th.*, 2-5.—Associate Professor Weschler.

XVII. Seminar.—The reading and discussion of current

technical papers and magazines. Students may elect any of the following subjects; heating and ventilating; refrigerating engineering; railroad engineering; steam-power; water-power; gas-power. This course is intended for Seniors in Mechanical Engineering. *M.*, 10-12.—Associate Professor Weschler.

XX. Thesis.—A thesis on some Mechanical Engineering subject, approved by the head of the Department, is required of every candidate for the degree Bachelor of Science in Mechanical Engineering. 4 *hrs. a week, second half-year.*—Associate Professor Weschler.

ADMISSION

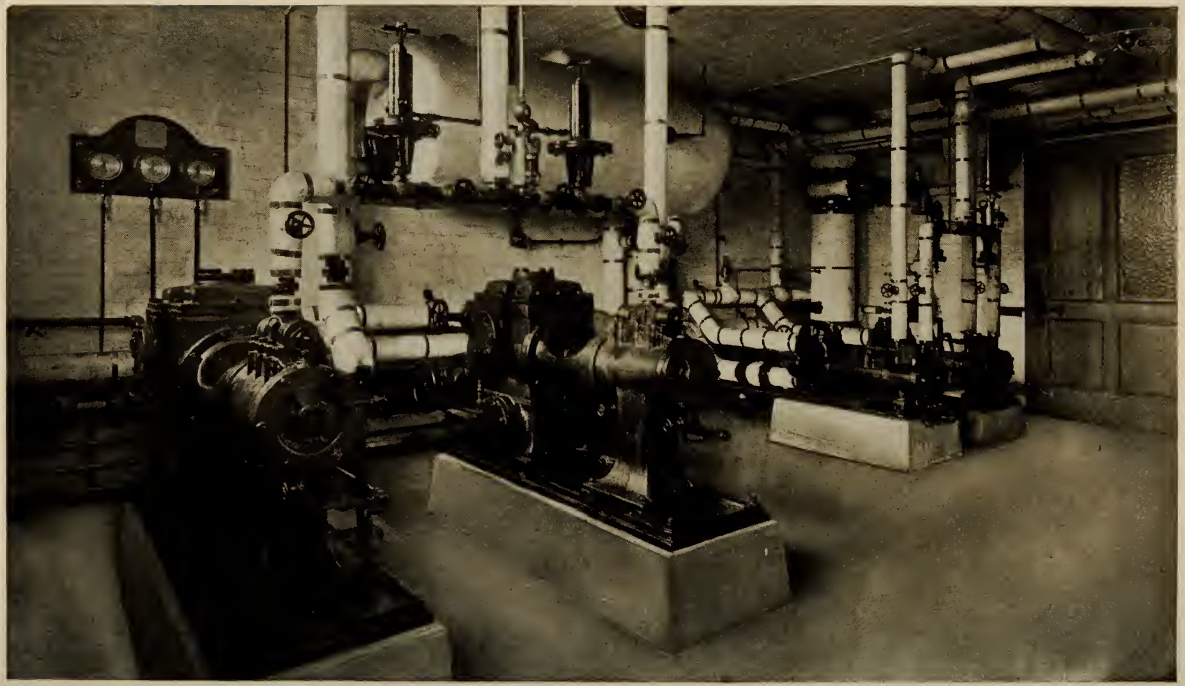
The School of Sciences is open to all male students who are of good moral character and studious habits, and who have attained the standard of scholarship required for admission to any of its departments as contained in the department statements.

ADMISSION FROM AFFILIATED INSTITUTIONS

In pursuance of the General Constitutions of the University and the instructions of the Holy See given in the Apostolic Letter of March 7, 1889, the Board of Trustees have made the following regulation: "Any Catholic institution of learning, whose courses of instruction qualify its students for admission to any Department of the University, may at its own request and without prejudice to its autonomy be enrolled, by order of the Board of Trustees, among the affiliated institutions of the University; and being so enrolled, its graduates shall be admitted to those Departments of the University without examination, upon presentation of the certificates or diplomas which attest their completion of its courses of study."

ADMISSION TO COURSES LEADING TO BACCALAUREATE DEGREES

Applicants for admission to the University who intend following Courses Leading to Baccalaureate Degrees must either pass the Entrance Examination specified on pages 36-37 or present certificates showing attainments equivalent to those indicated by the Entrance Examinations. These certificates may be



Pump Room

diplomas from high schools and academies, certificates of examination by some recognized examining board, or certificates of admission to good colleges or universities. The University reserves the right to reject any or all certificates, and to require the passing of the Entrance Examination by any or all applicants. Admission may be granted in spite of failure in some of the subjects of examination, provided they are such as will not embarrass the student in the performance of a full year's work, and may be made up within the first year. Applicants who have extended their studies beyond the requirements of the Entrance Examinations, and who desire advanced standing in the COURSES LEADING TO BACCALAUREATE DEGREES, must further pass examinations in those subjects which they desire counted for advanced standing, or they must present certificates, from colleges or universities, testifying to the satisfactory completion of the subjects.

ADMISSION TO COURSES LEADING TO ADVANCED DEGREES

Students who have already received the Baccaulaureate degree from a recognized college or university, or who upon entrance pass an examination in any group of studies leading to that degree, are permitted, if the requirements in French and German are also satisfied, to take up work leading to the Engineer's, Master's or Doctor's degrees offered by the School.

ADMISSION TO COURSES NOT LEADING TO DEGREES

Applicants for admission who desire to pursue only certain subjects, must give evidence, by such tests as it is deemed best to apply, of their fitness to follow those studies.

APPLICATION FOR ADMISSION

Persons desiring to become applicants for admission to the University, either for COURSES leading to degrees, or for selected STUDIES in the departments of the School, should obtain from the Registrar of the University, personally or by mail, the blank form of "Application for Admission," should fill it in as completely as possible, and return it to him, together with official, detailed statements from the high schools, academies, colleges or universities which the applicants attended, showing what

studies they pursued, to what extent, and the grades attained in each study.

Applicants coming from colleges and universities at which they did not complete their studies must present certificates of honorable dismissal.

A letter from some responsible person, preferably from the priest of the parish in which the applicant's home residence is situated, testifying that he is of good character, should accompany the application.

ENTRANCE EXAMINATIONS

The subjects in which applicants intending to follow Courses Leading to Baccalaureate Degrees will be examined, in case certificates are not accepted, are the following:

English: Reading, study and practice
History: *Two only of*
Ancient History
Mediaeval and Modern History
English History
American History and Civil Government
Latin[1]: Grammar, Composition, Caesar, Nepos, Cicero, Vergil, *or*
Greek: Grammar, Composition, Xenophon, Homer
French: Elementary, *or*
German: Elementary
French: Intermediate and Advanced, *or*
German: Intermediate and Advanced, *or*
Spanish
Mathematics: Elementary Algebra complete; Plane and Solid Geometry
Physical and Biological Sciences, Etc.: *Two only of*
Physics
Chemistry

[1]Latin is required of applicants for admission who intend following the Bachelor of Arts Course preparatory to Medicine; Latin or Greek is required of applicants for admission who intend following the Bachelor of Arts Course. Neither Latin nor Greek is required of applicants for admission who intend following any of the other Courses leading to Baccalaureate Degrees.

Engine Room

Botany
Geography
Zoology
Drawing
Music

The definition of requirements in each subject is that contained in document No. 62 of the COLLEGE ENTRANCE EXAMINATION BOARD.[2]

DEGREES

The University will confer the following degrees upon students in the School of Sciences who may be qualified to recieve them: Bachelor of Science (B.S.); Bachelor of Science in Civil Engineering (B.S. in Civil Engineering); Bachelor of Science in Electrical Engineering (B.S. in Electrical Engineering); Bachelor of Science in Chemical Engineering (B.S. in Chemical Engineering); Bachelor of Science in Mechanical Engineering (B.S. in Mechanical Engineering); Bachelor of Science in Architecture (B.S. in Architecture); Bachelor of Science in Architectural Engineering (B.S. in Architectural Engineering); Master of Science (M.S.); Doctor of Science (Sc.D.); Electrical Engineer (E.E.); Civil Engineer (C.E.); Mechanical Engineer (M.E.); Bachelor of Arts (A.B.); Master of Arts (A.M.); Doctor of Philosophy (Ph.D.).

The periods of study required for the different degrees may vary with the character and scope of the subjects of study, and with the attainments of the student at the time of his admission to the University. In ordinary cases, four years are required for the Bachelor's degree; one additional year for the Master of Arts; two additional years for the Engineer's or Master of Science degree; and two more years for the Doctor's degree.

Degrees may be granted at any period in the academic year. The public award of diplomas occurs on Graduation Day.

Students who are candidates for degrees should make, through

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[2]Copies of this document can be obtained by remitting ten cents in money or postage stamps to the COLLEGE ENTRANCE EXAMINATION BOARD, Post Office Sub-Station 84, New York, N. Y.

the Faculty, written application to the Rector for the degrees, at least one year before the date at which they may be conferred.

REQUIREMENTS FOR DEGREES

FOR THE BACHELOR'S DEGREE

The student must complete all the subjects in some one of the COURSES LEADING TO BACCALAUREATE DEGREES (see pages 41-58). He must also pass oral degree examinations, before the Faculty of Sciences, on all the subjects, in addition to the semi-annual and annual written course examinations.

FOR THE MASTER OF ARTS DEGREE

The ordinary requirements for the degree Master of Arts, under the Faculty of Sciences, for the holders of baccalaureate degrees from this University, or from approved colleges or universities, who are well prepared for advanced study in their special subjects, consist of one year of residence and study at this University, devoted to advanced work approved by the Faculty and Rector, and an oral degree examination, before the Faculty of Sciences, besides the semi-annual and annual written course examinations. Ability to read at sight French and German must be shown by examination before any programme of study for this degree will be accepted. Graduates of institutions whose requirements for admission and graduation are considerably below those of this University, and graduates of any institution who have not sufficient preparation for advanced work in their particular subjects of study, may have to devote two years to their study for this degree. The programme of study for Master of Arts under the Faculty of Sciences must form a consistent plan of work pursued with some definite aim, and must be made up chiefly from courses under this Faculty.

FOR THE ENGINEER'S AND MASTER OF SCIENCE DEGREES

The Engineer's and Master of Science degrees imply that the student is familiar with the history, actual status, literature, and methods of the science which he elects as his specialty. Hence he must follow a COURSE OF STUDY, approved by the Faculty of Sciences and Rector, and must:

Electrical Measurements

1. Spend at least two years in graduate study, the last of which must be at this University.
2. Fulfill the requirements in a major[1] subject and a minor[2] subject, in departments under the Faculty of Sciences.
3. Pass oral degree examinations, before the Faculty of Sciences, in his major and minor subjects, in addition to the semi-annual and annual written course examinations.
4. Show by examination ability to read at sight French and German.
5. Submit an acceptable dissertation embodying either the results of an original investigation or a critical study of some important work in his major subject.
6. At the option of the University, print the dissertation, in whole or in part, and present the University with two hundred copies. These printed copies must be actually in the possession of the University before the degree will be conferred.

FOR THE DOCTOR'S DEGREE

The Doctorate in Science or in Philosophy implies that the student has attained a certain breadth of view along with a special knowledge of his subject in all its details and bearings, and has given evidence of his ability to conduct independent research. Hence he must follow a COURSE OF STUDY approved by the Faculty of Sciences and Rector, and must:

1. Spend at least three years in graduate study, the last of which must be at this University.
2. Fulfill the requirements in a major subject and in two minor subjects, of which the major and one minor must be in departments under the Faculty of Sciences, the other minor may be in a department under any faculty.
3. Pass oral degree examinations, before the Faculty of Sciences, in his major and minor subjects, in addition to the semi-annual and annual written course examinations.
4. Show by examination ability to read at sight French and German.

[1]By a major subject is meant several of the more advanced COURSES OF INSTRUCTION in some one department.
[2]By a minor subject is meant one or more of the more advanced COURSES OF INSTRUCTION in some one department.

5. Submit an acceptable dissertation embodying the results of an original investigation in the major subject.

6. Print the dissertation in whole or in part,—if in part to the extent of not less than twenty-five octavo pages,—and present the University with two hundred copies. These printed copies must be actually in the possession of the University before the degree will be conferred.

	Structures) (4) Arch. II (2) (3) (4) M. E. XVII (Seminar) (4)	Mech. I (Sec. A) (2) Biology III (3) M. E. IX (E. & B.) (3)	C. E. XII Drafting (4)	C. E. VI (Theory of Structures) (3) M. E. IX (E. & B.) (3)		C. E. VI (Theory of Structures) (3) M. E. IX (E. & B.) (3)
11	Math. III (1) French I (Sec. B) (1) Spanish I (Sec. B) (1) Physics I (2) C. E. V. (Materials of Construction) (3) M. E. IX (E. & B.) (3) Arch. IV (2) (3) C. E. VIII (Structural Design) (4) E. E. III (Laboratory) (4) M. E. XVII (Seminar) (4)	History III (1) English II (2) Physics II (3) Arch. I (3) C. E. VII (Theory of Structures) (4) Biology VIII (4) M. E. XV (Thermo. 2) (4)	Math. III (1) French I (Sec. B) (1) Spanish I (Sec. B) (1) Physics I (2) C. E. X (Hydraulics) (3) Biology V (3) E. E. III Laboratory (4)	History III (1) Drawing III (Freehand Drawing) (1) English II (2) Physics VI (Magnetism and Electricity) (3) C. E. II (Higher Surveying) (3) E. E. X Laboratory (4)	Math. III (1) French I (Sec. B) (1) Spanish I (Sec. B) (1) Physics I (2) C. E. V. (Materials of Construction) (3) Arch. VI (3) E. E. III Laboratory (4) M. E. XV (Thermo. 2) (4)	History III (1) English II (2) Astronomy II (3) E. E. II Laboratory (3) C. E. IX (4) M. E. XV (Thermo. 2) (4)
12	Math. II (Sec. B) (1) C. E. X (Hydraulics) (3) C. E. VIII (Structural Design) (4) E. E. III Laboratory (4)	Math. II (Sec. B) (1) Mech. I (Sec. B) (2) Religion III (3) (4) Math. IV (Calculus) (Sec. B) (2)	Religion I (1) (2) C. E. IV (R. R. Surveying) (3) Chem. VIII (Mineralogy, Metallurgy and Assaying) (4) E. E. III Laboratory (4)	Math. II (Sec. B) (1) Mech. I (Sec. B) (2) Math. IV (Calculus) (Sec. B) (2) C. E. II (Higher Surveying) (3) E. E. X Laboratory (4)	Math. IV Problems (Sec. B) (2) Math. II (Sec. B) (1) C. E. X (Hydraulics) (3) E. E. III Laboratory (4)	Math. II (Sec. B) (1) Mech. I (Sec. B) (2) Math. IV (Calculus) (Sec.B) (2) E. E. II Laboratory (3)
P. M. 2	Chem. I Laboratory (Sec. A) (1) Drawing II and VII (Laboratory (Sec. B) (1) Chem. II Laboratory (2) C. E. I Field Work (2) Physics II Laboratory (3) Biology V Laboratory (3) E. E. II Laboratory (3) M. E. XVI (E. & P. Design) (4)	Chem. I Laboratory (Sec. B) (1) Physics I Laboratory (Sec. A) (2) Biology I Laboratory (2) Biology III Laboratory (3) M. E. VIII (Machine Design) (3) M. E. XII (H. E. Laboratory) (3)	Drawing II and VII Laboratory (Sec. A) (1) Physics I Laboratory (Sec. B) (2) E. E. II Laboratory (3) Biology V Laboratory (3) C. E. II Field Work (3) Biology VIII Laboratory (4) Chem. VIII Laboratory (4)	Chem. I Laboratory (Sec. B) (1) Chem. II Laboratory (2) Physics VI Laboratory (3) C. E. IV Field Work (3) M. E. VIII (Machine Design) (3) M. E. XVI (E. & P. Design) (4) Biology VII Laboratory (4) C. E. IX (4)	Chem. I Laboratory (Sec. A) (1) Biology I Laboratory (2) Mech. III Laboratory (3) Biology III Laboratory (3) M. E. X (S. E. Laboratory) (3) M. E. XIII (H. V. R. Laboratory) (4)	

SCHEDULE OF HOURS

SUBJECTS PRESCRIBED FOR BACCALAUREATE DEGREES IN THE SCHOOL OF SCIENCES

1914–1915

FIRST HALF-YEAR

HOURS	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
A M. 8	Math. IV. Problems (Sec. A) (2) Sociology I (3) Arch. V (3)	Arch. V (3) Economics I (B) (4)	Math. IV Problems (Sec. A) (2) Sociology I (3) Arch. II (2) (3) (4)	C. E. I. (2) Economics I (B) (4)	Drawing I Laboratory (Sec. B) (1) Arch. IV (2) (3) Sociology I (3) C.E. XI (Sanitary aod Hydraulic Eng'g) (4)	Ecooomics I (B) (4)
9	Math. I (1) Math. II (Sec. A) (1) Chem.II (Organic Chemistry) (2) C. E. I. (Surveying) (2) Philosophy I (3) E. E. X. (D. and A. C. Machinery) (4) Biology VI (4)	English I (Sec. B) (1) German I (Sec. B) (1) Drawing IV (Descriptive Geometry (2) Mech. III (Applied Mechanics) (3) C. E. XI (Sanitary and Hydraulic Eng'g) (4) E. E. III (A. C. Machinery) (4) M. E. XVI (E. & P. Design) (4)	Math. I (1) Math. II (Sec. A) (1) C. E. I. (2) Philosophy I (3) C. E. VII (Theory of Structures) (4) E. E. IV (D. C. Machine Design) (4) Biology VI (4)	English I (Sec. B) (1) German I (Sec. B) (1) Math. II (Sec. A) (1) Chem.II (Organic Chemistry) (2) C. E. I. (2) Mech. III (Applied Mechanics) (3) E. E. III (A. C. Machinery) (4) M. E. XVI (E. & P. Design) (4)	Math. I (1) Drawing I Laboratory (Sec. B) (1) Math. II (Sec. A) (1) Chem.II (Organic Chemistry) (2) C. E. I. (Surveying) (2) Philosophy I (3) C.E. VII (Theory of Structures) (4) Biology VI (4)	English I (Sec. B) (1) German I (Sec. B) (1) Math. II (Sec. A) (1) Drawing IV (Descriptive Geometry) (2) Mech. III (Applied Mechanics) (3) E. E. III (A. C. Machinery) (4) C. E. XI (Sanitary and Hydraulic Eng'g) (4)
10	Chem. I (1) Biology I (2) E. E. I (D. C. Machinery) (3) Astronomy I (3) M. E. XVII (Seminar) (4) C. E. VII (Theory of Structures) (4) Arch. II (2) (3) (4)	Englisb I (Sec. A (1) German I (Sec. A) (1) Math. IV (Calculus (Sec. A) (2) Mech. I (Sec. A) (2) Biology II (3) M. E. VII (Mechanism) (3)	Chem. I (1) Math. IV Problems (Sec. B) (2) Biology I (2) Astronomy I (3) E. E. I (D. C. Machinery) (3) C. E. XI (Sanitary and Hydraulic Eng'g) (4)	English I (Sec. A) (1) German I (Sec. A) (1) Math. IV (Calculus (Sec. A) (2) Mech. I (Sec. A) (2) M. E. VII (Mechanism) (3) M. E. IX (E. & B.) (3)	Chem. I (1) Biology I (2) E. E. I. (D. C. Machinery) (3) C. E. IV (R. R. Surveying) (3)	English I (Sec. A) (1) German I (Sec. A) (1) Math. IV (Calculus (Sec. A) (2) Mech. I (Sec. A) (2) M. E. VII (Mechanism) (3) E. E. V (P. & S. Bat.) (4)
11	French I (Sec. B) (1) Spanish I (Sec. B) (1) Math. III (1) Physics I (2) Arch. IV (2) (3) Math. V (Integral Calculus) (3) C. E. VIII (Structural Design) (4) E. E. III Laboratory (4) M. E. XVII (Seminar) (4)	History III (1) English II (2) Math. V (Integral Calculus) (3) Physics II (3) Arch. I (3) C. E. VII (Theory of Structures) (4) Biology VIII (4) M. E. XIV (Thermo.) (4)	French I (Sec. B) (1) Spanish I (Sec. B) (1) Math. III (1) Physics I (2) Math. V (Integral Calculus) (3) Arch. III (3) Biology IV (3) E. E. III Lahoratory (4)	History III (1) Drawing I (Mechanical Drawing) (1) English II (2) Physics VI (Magnetism and Electricity) (3) C. E. II (Higher Surveying) (3) E. E. X (Laboratory) (4)	French I (Sec. B) (1) Spanish I (Sec. B) (1) Math. III (1) Physics I (2) Math. V (Integral Calculus) (3) Arch. VI (3) E. E. III Lahoratory) (4) M. E. XIV (Thermo.) (4)	History III (1) Drawing I Laboratory (Sec. A) (1) English II (2) Astronomy I (3) E. E. I. Laboratory (3) C. E. IX (4) M. E. XIV (Thermo.) (4)
12	Math. II (Sec. B) (1) C. E. VIII (Structural Design) (4) E. E. III Lahoratory (4)	Math. II (Sec. B) (1) Math. IV (Calculus) (Sec. B) (2) Mech.I (Sec. B) (2) Religion III (3) (4) E. E. X Lahoratory (4)	Religion I (1) (2) C. E. IV (R. R. Surveying) (3) E. E. III Laboratory (4) Chem. VIII (Mineralogy, Metallurgy and Assaying) (4)	Math. II (Sec. B) (1) Mech. I (Sec. B) (2) Math. IV (Calculus) (Sec. B) (2) C. E. II (Higher Surveying) (3) E. E. X Lahoratory (4)	Math. II (Sec. B) (1) Math. IV Problems (Sec. B) (2) E. E. III Lahoratory (4)	Math. II (Sec. B) (1) Drawing I Laboratory (Sec. A) (1) Math IV (Calculus) (Sec. B) (2) Mech. I (Sec. B) (2) E. E. I Laboratory (3)
P. M. 2	Chem. I Laboratory (Sec. A) (1) Drawing I Laboratory (Sec. B) (1) Chem. II Laboratory (2) C. E. I Field Work (2) Physics II Laboratory (3) E. E. I Laboratory (3) Biology IV Laboratory (3) Biology VIII Lahoratory (4) C. E. VIII (Structural Design) (4) M. E. XVI (E. & P. Design) (4)	Chem. I Laboratory (Sec. B) (1) Physics I Laboratory (Sec. A) (2) Biology I Laboratory (2) C. E. III (Highway Eng'g) (3) Biology II Laboratory (3) M. E. VIII Machine Design (3) M. E. X (S. & G. Laboratory) (4)	Drawing I Laboratory (Sec. A) (1) Physics I Laboratory (Sec. B) (2) E. E. I Laboratory (3) C. E. II Field Work (3) Biology IV Laboratory (3) Biology VIII Laboratory (4) Chem. VIII Laboratory (4)	Chem. I Laboratory (Sec. B) (1) Chem. II Laboratory (2) Drawing IV Laboratory (Sec.A) (2) Physics VI Laboratory (3) C. E. IV Field Work (3) M. E. VIII Machine Design (3) C. E. IX (4) M. E. XVI (E. & P. Design) (4)	Chem. I Laboratory (Sec. A) (1) Biology I Laboratory (2) Drawing IV Laboratory (Sec.B) (2) Mech. III Laboratory (3) Biology II Laboratory (3) Biol. IV (Histology) (4) M. E. XI (S. & G. Laboratory) (4)	
3	Chem. I Laboratory (Sec. A) (1) Drawing I Laboratory (Sec.B) (1) Chem. II Laboratory (2) C. E. I Field Work (2) Physics II Laboratory (3) E. E. I Laboratory (3) Biology IV Laboratory (3) M. E. VIII Machine Design (3) M. E. XVI (E. & P. Design) (4) C. E. VIII (Structural Desigo) (4) Biology VIII Lahoratory (4)	Chem. I Laboratory (Sec. B) (1) Physics I Laboratory (Sec. A) (2) Biology I Laboratory (2) C. E. III Laboratory (3) Biology II Laboratory (3) M. E. XI (S. & G. Lahoratory) (4)	Drawing I Laboratory (Sec.A) (1) Physics I Laboratory (Sec. B) (2) E. E. I. Laboratory (3) Biology IV Laboratory (3) C. E. II Field Work (3) Biology VIII Laboratory (4) Chem. VIII Laboratory (4)	Chem. I Laboratory (Sec. B) (1) Chem. II Laboratory (2) Drawing IV Laboratory (Sec.A) (2) Physics VI Laboratory (3) C. E. IV Field Work (3) M. E. VIII (Machine Design (3) M. E. XVI (E. & P. Design) (4) C. E. IX (4)	Chem. I Laboratory (Sec. A) (1) Biology I Laboratory (2) Drawing IV Laboratory (Sec.B) (2) Mech. III Laboratory (3) Biology II Laboratory (3) Biol. IV (Histology) (4) M. E. XI (S. & G. Lahoratory) (4)	
4	Chem. I Laboratory (Sec. A) (1) Drawing I Laboratory (Sec. B) (1) Chem. II Laboratory (2) C. E. I Field Work (2) Physics II Laboratory (3) E. E. I. Laboratory (3) M. E. VIII Machine Design (3) M. E. XVI (E. & P. Design) (4) C. E VIII Structural Desigo) (4)	Chem. I Laboratory (Sec. B) (1) Physics I Laboratory (Sec. A) (2) C. E. III Laboratory (3) Biology II Laboratory (3) M. E. XI (S. & G. Laboratory) (4)	Drawing I Laboratory (Sec. A) (1) Physics I Lahoratory (Sec. B) (2) C. E. II Field Work (3) Chem. VIII Laboratory (4) Biol IV (Histology) (4) E. E. I. Laboratory (3)	Chem. I Laboratory (Sec. B) (1) Chem. II Laboratory (2) Drawing IV Laboratory (Sec.A) (2) Physics VI Laboratory (3) M. E. VIII Machine Design (3) C. E. IV Field Work (3) C. E. IX (4) M. E. XVI (E. & P. Design) (4)	Chem. I Laboratory (Sec. A) (1) Drawing IV Laboratory (Sec.B) (2) Biology II Laboratory (3) Biol. IV (Histology) (4) M. E. XI (S. & G. Laboratory) (4)	
5	Drawing I Laboratory (Sec. B) (1) C. E. I Field Work (2) C. E. VIII (Structural Design) (4)	C. E. III Laboratory (3)	Drawing I Laboratory (Sec. A) (1) C. E. II Field Work (3) Chem. VIII Laboratory (4)	Drawing IV Laboratory (Sec.A) (2) C. E. IV Field Work (3)	Drawing IV Laboratory (Sec.B) (2)	

This schedule is nearly complete for lecture and laboratory hours in all subjects prescribed for the baccalaureate degrees offered in the School of Scieoces. The numbers in parentheses indicate the year of the four-year degree course io which the corresponding subjects are ordinarily to be taken.

SCHEDULE OF HOURS

1914-1915

SECOND HALF-YEAR

Hours	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
A. M. 8	Math. IV Problems (Sec. A) (2) Sociology I (3) Arch. V (3)	Arcb. V (3) Economics I (B) (4)	Math. IV Problems (Sec. A) (2) Sociology I (3) Arch. II (2) (3) (4)	C. E. I (2) Economics I (B) (4)	Sociology I (3) Astron. II (3) Arcb. IV (2) (3) C. E. XII (R. R. Eng.) (4)	Economics I (B) (4)
9	Math. I (1) Math. II (Sec. A) (1) Chem. II (Organic Chemistry) (2) C. E. I (Surveying) (2) Philosopby I (3) E. E. X (D. and A. C. Machinery) (4)	English I (Sec. B) (1) German I (Sec. B) (1) Mech. III (Applied Mechanics) (3) C. E. XII (R. R. Eng'g) (4) E. E. III (A. C. Machinery) (4) M. E. XVI (E. & P. Design) (4)	Math. I (1) Matb. II (Sec. A) (1) C. E. I (2) Pbilosopby I (3) C. E. VII (Tbeory of Structures) (4) E. E. IV (A. C. Machine Design) (4) Biology VII (4)	English I (Sec. B) (1) German I (Sec. B) (1) Math. II (Sec. A) (1) Chem. II (Organic Chemistry) (2) Mech. III (Applied Mechanics) (3) M. E. XVI (E. & P. Design) (4) E. E. III (A. C. Machinery) (4)	Math. I (1) Math. II (Section A) (1) Chem. II (Organic Chemistry) (2) C. E. I (Surveying) (2) Philosopby I (3) C. E. VII (Theory of Structures) (4)	Englisb I (Sec. B) (1) German I (Sec. B) (1) Matb. II (Sec. A) (1) Mech. III (Applied Mechanics) (3) E. E. III (A. C. Machinery) (4) C. E. XII (R. R. Eng'g.) (4)
10	Chem. I (1) Biology I (2) Astronomy II (3) E. E. II (A. C. Circuits) (3) C. E. VII (Theory of Structures) (4) Arch. II (2) (3) (4) M. E. XVII (Seminar) (4)	English I (Sec. A) (1) German I (Sec. A) (1) Math. IV (Calculus) (Sec. A) (2) C. E. VI (Theory of Structures) (3) Mech. I (Sec. A) (2) Biology III (3) M. E. IX (E. & B.) (3)	Matb. IV Problems (Sec. B) (2) Chem. I (1) Biology I (2) Astronomy II (3) E. E. II (A. C. Circuits) (3) C. E. XII Drafting (4)	English I (Sec. A) (1) German I Sec. A) (1) Mech. I (Sec. A) (2) Math. IV (Calculus) (Sec. A) (2) C. E. VI (Tbeory of Structures) (3) M. E. IX (E. & B.) (3)	Chem. I (1) Biology I (2) C. E. IV (R. R. Surveying) (3) E. E. II (A. C. Circuits) (3)	English I (Sec. A) (1) German I (Sec. A) (1) Math. IV (Calculus) (Sec. A) (2) Mech. I (Sec. A) (2) C. E. VI (Theory of Structures) (3) M. E. IX (E. & B.) (3)
11	Math. III (1) Prench I (Sec. B) (1) Spanish I (Sec. B) (1) Pbysics I (2) C. E. V. (Materials of Construction) (3) M. E. IX (E. & B.) (3) Arch. IV (2) (3) C. E. VIII (Structural Design) (4) E. E. III (Laboratory) (4) M. E. XVII (Seminar) (4)	History III (1) English II (2) Physics II (3) Arch. I (3) C. E. VII (Theory of Structures) (4) Biology VIII (4) M. E. XV (Thermo. 2) (4)	Math. III (1) Prench I (Sec. B) (1) Spanish I (Sec. B) (1) Pbysics I (2) C. E. X (Hydraulics) (3) Biology V (3) E. E. III Laboratory (4)	History III (1) Drawing III (Preehand Drawing) (1) English II (2) Physics VI (Magnetism and Electricity) (3) C. E. II (Higher Surveying) (3) E. E. X Laboratory (4)	Math. III (1) Prench I (Sec. B) (1) Spanish I (Sec. B) (1) Physics I (2) C. E. V. (Materials of Construction) (3) Arch. VI (3) E. E. III Laboratory (4) M. E. XV (Thermo. 2) (4)	History III (1) English II (2) Astronomy II (3) E. E. II Laboratory (3) C. E. IX (4) M. E. XV (Thermo. 2) (4)
12	Math. II (Sec. B) (1) C. E. X (Hydraulics) (3) C. E. VIII (Structural Design) (4) E. E. III Laboratory (4)	Math. II (Sec. B) (1) Mech. I (Sec. B) (2) Religion III (3) (4) Math. IV (Calculus) (Sec. B) (2)	Religion I (1) (2) C. E. IV (R. R. Surveying) (3) Chem. VIII (Mineralogy, Metallurgy and Assaying) (4) E. E. III Laboratory (4)	Math. II (Sec. B) (1) Mech. I (Sec. B) (2) Math. IV (Calculus) (Sec. B) (2) C. E. II (Higher Surveying) (3) E. E. X Laboratory (4)	Math. IV Problems (Sec. B) (2) Math. II (Sec. B) (1) C. E. X (Hydraulics) (3) E. E. III Laboratory (4)	Math. II (Sec. B) (1) Mech. I (Sec. B) (2) Math. IV (Calculus) (Sec.B) (2) E. E. II Laboratory (3)
P. M. 2	Chem. I Laboratory (Sec. A) (1) Drawing II and VII (Laboratory (Sec. B) (1) Chem. II Laboratory (2) C. E. I Pield Work (2) Physics II Laboratory (3) Biology V Laboratory (3) E. E. II Laboratory (3) M. E. XVI (E. & P. Design) (4) C. E. VIII (Structural Design) (4) Biology VIII Laboratory (4)	Cbem. I Laboratory (Sec. B) (1) Physics I Laboratory (Sec. A) (2) Biology I Laboratory (2) Biology III Laboratory (3) M. E. VIII (Machine Design) (3) M. E. XII (H. E. Laboratory) (3)	Drawing II and VII Laboratory (Sec. A) (1) Physics I Laboratory (Sec. B) (2) E. E. II Laboratory (3) Biology V Laboratory (3) C. E. II Field Work (3) Biology VIII Laboratory (4) Chem. VIII Laboratory (4)	Cbem. I Laboratory (Sec. B) (1) Chem. II Laboratory (2) Physics VI Laboratory (3) C. E. IV Field Work (3) M. E. VIII (Machine Design) (3) M. E. XVI (E. & P. Design) (4) Biology VII Laboratory (4) C. E. IX (4)	Chem. I Laboratory (Sec. A) (1) Biology I Laboratory (2) Mech. III Laboratory (3) Biology III Laboratory (3) M. E. X (S. E. Laboratory) (3) M. E. XIII (H. V. R. Laboratory) (4)	
3	Chem. I Laboratory (Sec. A) (1) Drawing II and VII Laboratory (Sec. B) (1) Chem. II Laboratory (2) C. E. I Field Work (2) Physics II Laboratory (3) E. E. II Laboratory (3) M. E. VIII (Machine Design) (3) Biology V Laboratory (3) Biology VIII Laboratory (4) C. E. VIII (Structural Design) (4) M. E. XVI (E. & P. Design) (4)	Chem. I Laboratory (Sec. B) (1) Physics I Laboratory (Sec. A) (2) Biology I Laboratory (2) C. E. X Laboratory (3) Biology III Laboratory (3) M. E. XII (H. E. Laboratory) (3)	Drawing II and VII Laboratory (Sec. A) (1) Physics I Laboratory (Sec. B) (2) E. E. II Laboratory (3) Biology V Laboratory (3) C. E. II Field Work (3) Chem. VIII Laboratory (4) Biology VIII Laboratory (4)	Chem. I Laboratory (Sec. B) (1) Chem. II Laboratory (2) Physics VI Laboratory (3) C. E. IV Field Work (3) M. E. VIII (Machine Design) (3) M. E. XVI (E. & P. Design) (4) Biology VII Laboratory (4) C. E. IX (4)	Cbem. I Laboratory (Sec. A) (1) Biology I Laboratory (2) Mech. III Laboratory (3) Biology III Laboratory (3) M. E. X (S. E Laboratory) (3) M. E. XIII (H. V. R. Laboratory (4)	
4	Cbem. I Laboratory (Sec. A) (1) Drawing II and VII Laboratory (Sec. B) (1) Chem. II Laboratory (2) C. E. I Field Work (2) Physics II Laboratory (3) E. E. II Laboratory (3) M. E. VIII (Machine Design) (3) C. E. VIII (Structural Design) (4) M. E. XVI (E. & P. Design) (4)	Chem. I Laboratory (Sec. B) (1) Physics I Laboratory (Sec. A) (2) C. E. X Laboratory (3) Biology III Laboratory (3) M. E. XII (H. E. Laboratory) (3)	Drawing II and VII Laboratory (Sec. A) (1) Physics I Laboratory (Sec. B) (2) C. E. II Field Work (3) E. E. II Laboratory (3) Chem. VIII Laboratory (4)	Chem. I Laboratory (Sec. B) (1) Chem. II Laboratory (2) Physics VI Laboratory (3) C. E. IV Field Work (3) M. E. VIII (Machine Design) (3) Biology VII Laboratory (4) C. E. IX (4) M. E. XVI (E. & P. Design) (4)	Chem. I Laboratory (Sec. A) (1) Biology III Laboratory (3) M. E. X (S. E. Laboratory) (3) M. E. XIII (H. V. R. Laboratory) (4)	
5	Drawing II and VII (Laboratory (Sec. B) (1) C. E. I Field Work (2) C. E. VIII (Structural Design) (4)	C. E. X Laboratory (3) General Law Lectures (4)	Drawing II and VII Laboratory (Sec. A) (1) C. E. II Field Work (3) Chem. VIII Laboratory (4)	C. E. IV Field Work (3)		

	C. E. VIII (Structural Design) (4) Biology VIII Laboratory (4)					
3	Chem. I Laboratory (Sec. A) (1) Drawing II and VII Laboratory (Sec. B) (1) Chem. II Laboratory (2) C. E. I Field Work (2) Physics II Laboratory (3) E. E. II Laboratory (3) M. E. VIII (Machine Design) (3) Biology V Laboratory (3) Biology VIII Laboratory (4) C. E. VIII (Structural Design) (4) M. E. XVI (E. & P. Design) (4)	Chem. I Laboratory (Sec. B) (1) Physics I Laboratory (Sec. A) (2) Biology I Laboratory (2) C. E. X Laboratory (3) Biology III Laboratory (3) M. E. XII (H. E. Laboratory) (3)	Drawing II and VII Laboratory (Sec. A) (1) Physics I Laboratory (Sec. B) (2) E. E. II Laboratory (3) Biology V Laboratory (3) C. E. II Field Work (3) Chem. VIII Laboratory (4) Biology VIII Laboratory (4)	Chem. I Laboratory (Sec. B) (1) Chem. II Laboratory (2) Physics VI Laboratory (3) C. E. IV Field Work (3) M. E. VIII (Machine Design) (3) M. E. XVI (E. & P. Design) (4) Biology VII Laboratory (4) C. E. IX [illegible] (4)	Chem. I Laboratory (Sec. A) (1) Biology I Laboratory (2) Mech. III Laboratory (3) Biology III Laboratory (3) M. E. X (S. E. Laboratory) (3) M. E. XIII (H. V. R. Laboratory (4)	
4	Chem. I Laboratory (Sec. A) (1) Drawing II and VII Laboratory (Sec. B) (1) Chem. II Laboratory (2) C. E. I Field Work (2) Physics II Laboratory (3) E. E. II Laboratory (3) M. E. VIII (Machine Design) (3) C. E. VIII (Structural Design) (4) M. E. XVI (E. & P. Design) (4)	Chem. I Laboratory (Sec. B) (1) Physics I Laboratory (Sec. A) (2) C. E. X Laboratory (3) Biology III Laboratory (3) M. E. XII (H. E. Laboratory) (3)	Drawing II and VII Laboratory (Sec. A) (1) Physics I Laboratory (Sec. B) (2) C. E. II Field Work (3) E. E. II Laboratory (3) Chem. VIII Laboratory (4)	Chem. I Laboratory (Sec. B) (1) Chem. II Laboratory (2) Physics VI Laboratory (3) C. E. IV Field Work (3) M. E. VIII (Machine Design) (3) Biology VII Laboratory (4) C. E. IX (4) M. E. XVI (E. & P. Design) (4)	Chem. I Laboratory (Sec. A) (1) Biology III Laboratory (3) M. E. X (S. E. Laboratory) (3) M. E. XIII (H. V. R. Laboratory) (4)	
5	Drawing II and VII (Laboratory (Sec. B) (1) C. E. I Field Work (2) C. E. VIII (Structural Design) (4)	C. E. X Laboratory (3) General Law Lectures (4)	Drawing II and VII Laboratory (Sec. A) (1) C. E. II Field Work (3) Chem. VIII Laboratory (4)	C. E. IV Field Work (3)		

COURSES LEADING TO BACCALAUREATE DEGREES

In estimating credits one lecture hour per week for a year is taken as a unit, two laboratory or drafting hours are rated as equivalent to one lecture hour.

Subjects not in the departments of this school are described in the Year-Book, in the statements of other schools.

I. BACHELOR OF ARTS

FIRST YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics II Trig., Adv. Alg. and Anal. Geom.	5	Mathematics II Trig., Adv. Alg. and Anal. Geom.	5
Chemistry I General Chemistry.	6	Chemistry I General Chemistry.	6
English I (*a*) Theory of Rhetoric.	2	English I (*a*) Theory of Rhetoric.	2
English I (*b*) Outline Hist. of Eng. and Am. Lit.	1	English I (*b*) Outline Hist. of Eng. and Am. Lit.	1
French I, German I, or Spanish I[1] Elementary Course.	3	French I, German I, or Spanish I[1] Elementary Course.	3
History III American Political History.	3	History III American Political History.	3
Religion II[2] The Divinity of Christ.	1	Religion II[2] The Divinity of Christ.	1

Total credits for the year.....21

SECOND YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Physics I General Theoret. and Exp. Physics.	5	Physics I General Theoret. and Exp. Physics.	5
Biology I General Biology.	5	Biology I General Biology.	5
English II (*a*) English Prose Composition.	1	English II (*b*) Versification.	1
English II (*c*) History of English Literature.	1	English II (*c*) History of English Literature.	1
English II (*d*) Special Study of Chaucer and Spenser.	1	English II (*d*) Special Study of Chaucer and Spenser.	1
French II, German II, or Spanish II Intermediate Course.	3	French II, German II, or Spanish II Intermediate Course.	3
Religion II[2] The Divinity of Christ.	1	Religion II[2] The Divinity of Christ.	1
Electives	4	Electives	4

Total credits for the year.....21

THIRD YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Philosophy I	3	Philosophy I	3
Introduction to Philosophy.		Introduction to Philosophy.	
Religion IV[2]	1	Religion IV[2]	1
Catholic Teaching.		Catholic Teaching.	
Electives[3]	17	Electives[3]	17

Total credits for the year.....21

FOURTH YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Religion IV[2]	1	Religion IV[2]	1
Catholic Teaching.		Catholic Teaching.	
Electives[4]	20	Electives[4]	20

Total credits for the year.....21

[1]Students are required to take some one of the languages, French, German or Spanish, not offered for admission.

[2]Religion I and II are given in alternate years to first and second year students together; Religion III and IV are given in alternate years to third and fourth year students together. Non-Catholic students are permitted to substitute for the courses in Religion an equivalent number of hours' work in courses chosen from those offered by the School of Sciences, School of Philosophy, or School of Letters, not prescribed in this degree course.

[3] and [4]Not less than eleven of the credits for electives for the year must be for work done in the School of Sciences, the others may be for work done in the School of Philosophy or the School of Letters.

Chemistry Lecture-Room

II. BACHELOR OF ARTS PREPARATORY TO MEDICINE

FIRST YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics I Adv. Alg. and Solid Geom.	3	Mathematics I Adv. Alg. and Solid Geom.	3
Chemistry I General Chemistry.	6	Chemistry I General Chemistry.	6
English I (*a*) Theory of Rhetoric.	2	English I (*a*) Theory of Rhetoric.	2
English I (*b*) Outline Hist. of Eng. and Am. Lit.	1	English I (*b*) Outline Hist. of Eng. and Am. Lit.	1
French I or German I[1] Elementary Course.	3	French I or German I[1] Elementary Course.	3
Architecture II Freehand Drawing.	3	Architecture II Freehand Drawing.	3
History III American Political History.	3	History III American Political History.	3
Religion II[2] The Divinity of Christ.	1	Religion II[2] The Divinity of Christ.	1

Total credits for the year.....22

SECOND YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Biology I General Biology.	5	Biology I General Biology.	5
Chemistry II Organic Chemistry.	5	Chemistry II Organic Chemistry.	5
Physics I General Theoret. and Exp. Physics.	5	Physics I General Theoret. and Exp. Physics.	5
English II (*a*) English Prose Composition.	1	English II (*b*) Versification.	1
English II (*c*) History of English Literature.	1	English II (*c*) History of English Literature.	1
English II (*d*) Special Study of Chaucer and Spenser.	1	English II (*d*) Special Study of Chaucer and Spenser.	1
French II or German II Intermediate Course.	3	French II or German II Intermediate Course.	3
Religion II[2] The Divinity of Christ.	1	Religion II[2] The Divinity of Christ.	1

Total credits for the year.....22

THIRD YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Biology II Vertebrate Anatomy.	4	Biology III Histology.	4
Chemistry III Quantitative Analysis.	4	Chemistry III Quantitative Analysis.	4
Biology IV Plant Morphology.	3	Biology V Plant Histology and Physiology.	3
French III or German III[1] Advanced Course.	3	French III or German III[1] Advanced Course.	3
Philosophy I Introduction to Philosophy.	3	Philosophy I Introduction to Philosophy.	3
Sociology I Elementary Sociology.	3	Sociology I Elementary Sociology.	3
Religion IV[2] Catholic Teaching.	1	Religion IV[2] Catholic Teaching.	1

Total credits for the year.....21

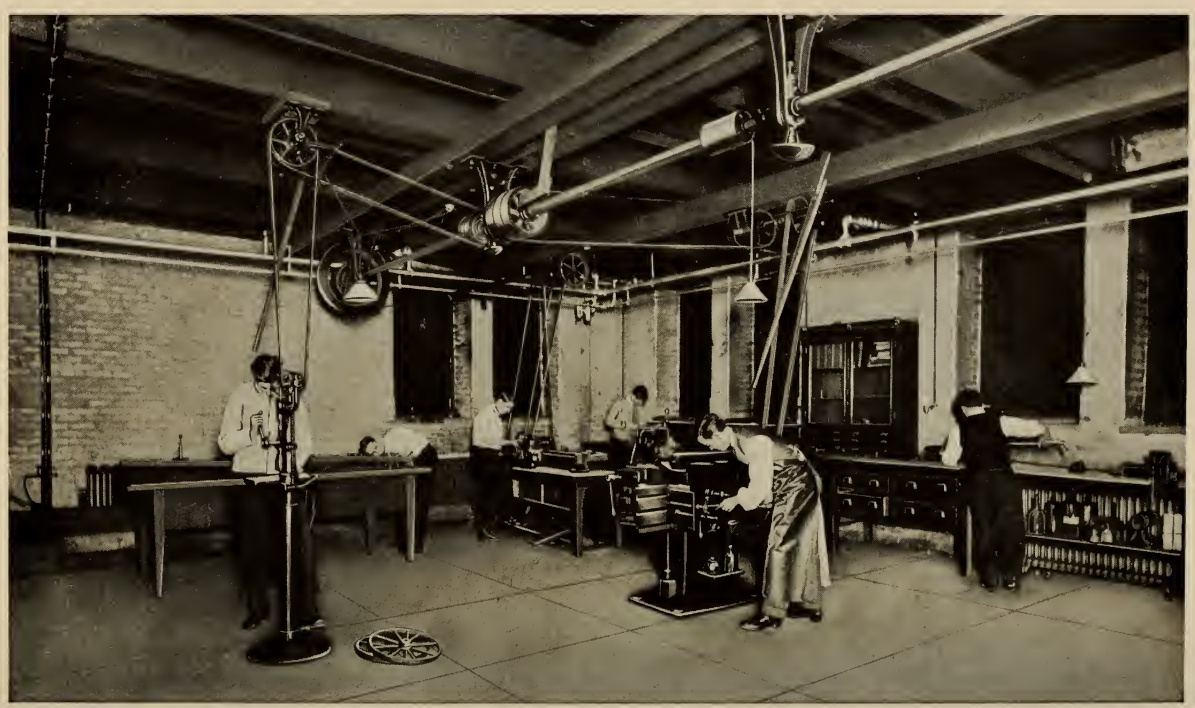
FOURTH YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Biology VI Physiology.	3	Biology VII Bacteriology.	4
Biology VIII Embryology.	3	Biology VIII Embryology.	3
Chemistry IX Special Methods in Analysis of Poisons, Drugs and Foods.	4	Chemistry IX Special Methods in Analysis of Poisons, Drugs and Foods.	4
Economics I (*b*) Elements of Political Economy.	3	Economics I (*b*) Elements of Political Economy.	3
Religion IV[2] Catholic Teaching.	1	Religion IV[2] Catholic Teaching.	1
Electives	7	Electives	6

Total credits for the year.....21

[1]Students are required to take that one of the languages, French or German, not offered for admission.

[2]See note at bottom of page 42.



Physics Instrument Shop

III. BACHELOR OF SCIENCE

FIRST YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics II Trig., Adv. Alg. and Anal. Geom.	5	Mathematics II Trig., Adv. Alg. and Anal. Geom.	5
Chemistry I General Chemistry.	6	Chemistry I General Chemistry.	6
Drawing I Mechanical Drawing.	4	Drawing II or VII Machine Drawing or Topographic Drawing.	2
English I (*a*) Theory of Rhetoric.	2	Drawing III Freehand Drawing.	1
English I (*b*) Outline Hist. of Eng. and Am. Lit.	1	English I (*a*) Theory of Rhetoric.	2
French I, German I, or Spanish I[1] Elementary Course.	3	English I (*b*) Outline Hist. of Eng. and Am. Lit.	1
Religion II[2] The Divinity of Christ.	1	French I, German I, or Spanish I[1] Elementary Course.	3
		Religion II[2] The Divinity of Christ.	1

Total credits for the year.....21½

SECOND YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics IV Calculus, Elementary Course.	4	Mathematics IV Calculus, Elementary Course.	4
Physics I General Theoret. and Exp. Physics.	5	Physics I General Theoret. and Exp. Physics.	5
Mechanics I Theoretical Mechanics.	3	Mechanics I Theoretical Mechanics.	3
Drawing IV Descriptive Geometry.	4	Biology I General Biology.	5
Biology I General Biology.	5	English II (*b*) Versification.	1
English II (*a*) English Prose Composition.	1	English II (*c*) History of English Literature.	1
English II (*c*) History of English Literature.	1	English II (*d*) Special Study of Chaucer and Spenser.	1
English II (*d*) Special Study of Chaucer and Spenser.	1	Religion II[2] The Divinity of Christ.	1
Religion II[2] The Divinity of Christ.	1		

Total credits for the year.....23

THIRD YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Philosophy I Introduction to Philosophy.	3	Philosophy I Introduction to Philosophy.	3
Religion IV[2] Catholic Teaching.	1	Religion IV[2] Catholic Teaching.	1
Electives[3]	17	Electives[3]	17
Total credits for the year	21		

FOURTH YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Religion IV[2] Catholic Teaching.	1	Religion IV[2] Catholic Teaching.	1
Electives[4]	20	Electives[4]	20
Total credits for the year	21		

[1] and [2] See notes at bottom of page 42.
[3] and [4]Not less than fourteen of the credits for electives for the year must be for work done in the School of Sciences, the others may be for work done in the School of Philosophy or the School of Letters.

IV. BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

FIRST YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics II Trig., Adv. Alg. and Anal. Geom.	5	Mathematics II Trig., Adv. Alg. and Anal. Geom.	5
Chemistry I General Chemistry.	6	Chemistry I General Chemistry.	6
Drawing I Mechanical Drawing.	4	Drawing II or VII Machine Drawing, or Topographic Drawing.	2
English I (*a*) Theory of Rhetoric.	2	Drawing III Freehand Drawing.	2
English I (*b*) Outline Hist. of Eng. and Am. Lit.	1	English I (*a*) Theory of Rhetoric.	2
French I, German I, or Spanish I[1] Elementary Course.	3	English I (*b*) Outline Hist. of Eng. and Am. Lit.	1
Religion II[2] The Divinity of Christ.	1	French I, German I, or Spanish I[1] Elementary Course.	3
		Religion II[2] The Divinity of Christ.	1
Total credits for the year	21½		

Metallurgy and Assaying

SECOND YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics IV Calculus, Elementary Course.	4	Mathematics IV Calculus, Elementary Course.	4
Chemistry II Organic Chemistry.	5	Chemistry II Organic Chemistry.	5
Chemistry III Quantitative Analysis.	4	Chemistry III Quantitative Analysis.	4
Physics I General Theoret. and Exp. Physics.	5	Physics I General Theoret. and Exp. Physics.	5
Mechanics I Theoretical Mechanics.	3	Mechanics I Theoretical Mechanics.	3
Religion II[2] The Divinity of Christ.	1	Religion II[2] The Divinity of Christ.	1

Total credits for the year.....21

THIRD YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Chemistry VI Water, Gas and Fuel Analysis.	3	Chemistry VI Water, Gas and Fuel Analysis.	3
Chemistry VIII Mineralogy, Metallurgy and Assaying.	3	Chemistry VIII Mineralogy, Metallurgy and Assaying.	3
Chemistry IX Special Methods in Inorganic Chemistry.	4	Chemistry IX Special Methods in Inorganic Chemistry.	4
Mechanics III Applied Mechanics.	4	Mechanics III Applied Mechanics.	4
Biology I General Biology.	5	Biology I General Biology.	5
Philosophy I Introduction to Philosophy.	3	Philosophy I Introduction to Philosophy.	3
Religion IV[2] Catholic Teaching.	1	Religion IV[2] Catholic Teaching.	1

Total credits for the year.....23

FOURTH YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Chemistry IV. Physical Chemistry.	3	Chemistry IV. Physical Chemistry.	3
Chemistry VII. Industrial Chemistry.	3	Chemistry VII. Industrial Chemistry.	3
Chemistry V. Municipal Chemistry.	4	Chemistry V. Municipal Chemistry.	4
Chemistry XX. Thesis.	6	Chemistry XX. Thesis.	6
Economics I (*b*). Elements of Political Economy.	3	General Law Lectures	1
Religion IV[2]. Catholic Teaching.	1	Economics I (*b*). Elements of Political Economy.	3
		Religion IV[2]. Catholic Teaching.	1

Total credits for the year.....20½

[2]See note at bottom of page 42.

V. BACHELOR OF SCIENCE IN ARCHITECTURE

FIRST YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics II. Trig., Adv. Alg. and Anal. Geom.	5	Mathematics II. Trig., Adv. Alg. and Anal. Geom.	5
Chemistry I. General Chemistry.	6	Chemistry I. General Chemistry.	6
Architecture I. Architectural Drawing.	2	Architecture I. Architectural Drawing.	2
Architecture II. Freehand Drawing.	3	Architecture II. Freehand Drawing.	3
Architecture IV. Design.	2	Architecture IV. Design.	2
Architecture V. Architectural History.	2	Architecture V. Architectural History.	2
English I (*a*). Theory of Rhetoric.	2	English I (*a*). Theory of Rhetoric.	2
English I (*b*). Outline Hist. of Eng. and Am. Lit.	1	English I (*b*). Outline Hist. of Eng. and Am. Lit.	1
French I, German I, or Spanish I[1] Elementary Course.	3	French I, German I, or Spanish I[1] Elementary Course.	3
Religion II[2]. The Divinity of Christ.	1	Religion II[2]. The Divinity of Christ.	1

Total credits for the year.....27

Mechanical Drawing

SECOND YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Physics I. General Theoret. and Exp. Physics.	5	Physics I. General Theoret. and Exp. Physics.	5
Drawing IV. Descriptive Geometry.	4	Civil Engineering I. Land and Topographical Surveying.	6
Civil Engineering I. Land and Topographical Surveying.	7	Architecture II. Freehand Drawing.	2
Architecture II. Freehand Drawing.	2	Architecture III. Water Color and Rendering.	2
Architecture III. Water Color and Rendering.	2	Architecture IV. Design.	2
Architecture IV. Design.	2	Architecture V. Architectural History.	2
Architecture V. Architectural History.	2	English II (*b*). Versification.	1
English II (*a*). English Prose Composition.	1	English II (*c*). History of English Literature.	1
English II (*c*). History of English Literature.	1	English II (*d*). Special Study of Chaucer and Spenser.	1
English II (*d*). Special Study of Chaucer and Spenser.	1	Religion II[2]. The Divinity of Christ.	1
Religion II[2]. The Divinity of Christ.	1		

Total credits for the year.....25½

THIRD YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Architecture II. Freehand Drawing.	2	Architecture II. Freehand Drawing.	2
Architecture IV. Design.	8	Architecture IV. Design.	8
Architecture V. Architectural History.	2	Architecture V. Architectural History.	2
Architecture VI. Construction.	4	Architecture VI. Construction.	4
Philosophy I. Introduction to Philosophy.	3	Mechanical Engineering VIII. Heating and Ventilation.	1
Religion IV[2]. Catholic Teaching.	1	Philosophy I. Introduction to Philosophy.	3
		Religion IV[2]. Catholic Teaching.	1

Total credits for the year.....20½

FOURTH YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Architecture II. Freehand Drawing.	1	Architecture II. Freehand Drawing.	1
Architecture IV. Design.	8	Architecture IV. Design.	8
Architecture VI. Construction.	6	Architecture VI. Construction.	6
Architecture VII. Landscape Architecture.	2	Architecture VIII. History of Civilization and Art.	3
Economics I (*b*). Elements of Political Economy.	3	Economics I (*b*). Elements of Political Economy.	3
Religion IV[2]. Catholic Teaching.	1	Religion IV[2]. Catholic Teaching.	1

Total credits for the year.....21½

VI. BACHELOR OF SCIENCE IN ARCHITECTURAL ENGINEERING

FIRST YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics II. Trig., Adv. Alg. and Anal. Geom.	5	Mathematics II. Trig., Adv. Alg. and Anal. Geom.	5
Chemistry I. General Chemistry.	6	Chemistry I. General Chemistry.	6
Drawing I. Mechanical Drawing.	4	Drawing III. Freehand Drawing.	1
English I (*a*). Theory of Rhetoric.	2	Drawing VII. Topographic Drawing.	2
English I (*b*). Outline Hist. of Eng. and Am. Lit.	1	English I (*a*). Theory of Rhetoric.	2
French I, German I, or Spanish I[1] Elementary Course.	3	English I (*b*). Outline Hist. of Eng. and Am. Lit.	1
Religion II[2]. The Divinity of Christ.	1	French I, German I, or Spanish I[1] Elementary Course.	3
		Religion II[2]. The Divinity of Christ.	1

Total credits for the year.....21½

[1] and [2] See notes at bottom of page 42.

Civil Engineering Drafting

SECOND YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics IV. Calculus, Elementary Course.	4	Mathematics IV. Calculus, Elementary Course.	4
Physics I. General Theoret. and Exp. Physics.	5	Physics I. General Theoret. and Exp. Physics.	5
Mechanics I. Theoretical Mechanics.	3	Mechanics I. Theoretical Mechanics.	3
Drawing IV. Descriptive Geometry.	4	Civil Engineering I. Land and Topographical Surveying.	6
Civil Engineering I. Land and Topographical Surveying.	7	Architecture II. Freehand Drawing.	1
Architecture II. Freehand Drawing.	1	Architecture IV. Design.	2
Architecture IV. Design.	2	Architecture V. Architectural History.	2
English II (*a*). English Prose Composition.	1	English II (*b*). Versification.	1
English II (*c*). History of English Literature.	1	English II (*c*). History of English Literature.	1
English II (*d*). Special Study of Chaucer and Spenser.	1	English II (*d*). Special Study of Chaucer and Spenser.	1
Religion II[2]. The Divinity of Christ.	1	Religion II[2]. The Divinity of Christ.	1

Total credits for the year.....28½

THIRD YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics V. Calculus, Advanced Course.	4	Mechanics III. Applied Mechanics.	4
Mechanics III. Applied Mechanics.	4	Architecture II. Freehand Drawing.	1
Architecture II. Freehand Drawing.	1	Architecture IV. Design.	6
Architecture IV. Design.	6	Architecture V. Architectural History.	2
Architecture V. Architectural History.	2	Architecture VI. Construction.	4
Architecture VI. Construction.	4	Civil Engineering VI. Theory of Structures, *First Course.*	3
Philosophy I. Introduction to Philosophy.	3	Philosophy I. Introduction to Philosophy.	3
Religion IV[2]. Catholic Teaching.	1	Religion IV[2]. Catholic Teaching.	1

Total credits for the year.....24½

FOURTH YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Architecture IV. Design.	6	Architecture IV. Design.	6
Architecture VI. Construction.	2	Architecture VI. Construction.	2
Civil Engineering VII. Theory of Structures, *Second Course.*	4	Architecture VIII. History of Civilization and Art.	3
Civil Engineering VIII. Structural Design.	3	Civil Engineering VII. Theory of Structures, *Second Course.*	4
Civil Engineering IX. Masonry Construction.	1	Civil Engineering VIII. Structural Design.	3
Electrical Engineering X. D. and A. C. Machinery.	3	Electrical Engineering X. D. and A. C. Machinery.	3
Economics I (*b*). Elements of Political Economy.	3	General Law Lectures.	1
Religion IV[2]. Catholic Teaching.	1	Economics I (*b*). Elements of Political Economy.	3
		Religion IV[2]. Catholic Teaching.	1

Total credits for the year.....24½

VII. BACHELOR OF SCIENCE IN CIVIL ENGINEERING

FIRST YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics II. Trig., Adv. Alg. and Anal. Geom.	5	Mathematics II. Trig., Adv. Alg. and Anal. Geom.	5
Chemistry I. General Chemistry.	6	Chemistry I. General Chemistry	6
Drawing I. Mechanical Drawing.	4	Drawing III. Freehand Drawing.	1
English I (*a*). Theory of Rhetoric.	2	Drawing VII. Topographic Drawing.	2
English I (*b*). Outline Hist. of Eng. and Am. Lit.	1	English I (*a*). Theory of Rhetoric.	2
French I, German I, or Spanish I[1] Elementary Course.	3	English I (*b*). Outline Hist. of Eng. and Am. Lit.	1
Religion II[2]. The Divinity of Christ.	1	French I, German I, or Spanish I[1] Elementary Course.	3
		Religion II[2]. The Divinity of Christ.	1

Total credits for the year.....21½

[1] and [2] See notes at bottom of page 42.

Railroad Surveying

SECOND YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics IV. Calculus, Elementary Course.	4	Mathematics IV. Calculus, Elementary Course.	4
Physics I. General Theoret. and Exp. Physics.	5	Physics I. General Theoret. and Exp. Physics.	5
Mechanics I. Theoretical Mechanics.	3	Mechanics I. Theoretical Mechanics.	3
Drawing IV. Descriptive Geometry.	4	Civil Engineering I. Land and Topographical Surveying.	6
Civil Engineering I. Land and Topographical Surveying.	7	English II (*b*). Versification.	1
English II (*a*). English Prose Composition.	1	English II (*c*). History of English Composition.	1
English II (*c*). History of English Literature.	1	English II (*d*). Special Study of Chaucer and Spenser.	1
English II (*d*). Special Study of Chaucer and Spenser.	1	Religion II[2]. The Divinity of Christ.	1
Religion II[2]. The Divinity of Christ.	1		

Total credits for the year.....26½

THIRD YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics V. Calculus, Advanced Course.	4	Mechanics III. Applied Mechanics.	4
Mechanics III. Applied Mechanics.	4	Astronomy II. Practical Astronomy.	3
Astronomy I. General Astronomy.	3	Civil Engineering II. Higher Surveying.	3
Civil Engineering II. Higher Surveying.	3	Civil Engineering IV. Railroad Surveying.	4
Civil Engineering III. Highway Engineering.	2	Civil Engineering V. Materials of Construction.	2
Civil Engineering IV. Railroad Surveying.	4	Civil Engineering VI. Theory of Structures, *First Course.*	3
Philosophy I. Introduction to Philosophy.	3	Civil Engineering X. Theoretical Hydraulics.	4
Religion IV[2]. Catholic Teaching.	1	Philosophy I. Introduction to Philosophy.	3
		Religion IV[2]. Catholic Teaching.	1

Total credits for the year.....25½

FOURTH YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Civil Engineering VII Theory of Structures, *Second Course.*	4	Civil Engineering VII Theory of Structures, *Second Course.*	4
Civil Engineering VIII Structural Design.	3	Civil Engineering VIII Structural Design.	3
Civil Engineering IX Masonry Construction.	4	Civil Engineering IX Masonry Construction.	4
Civil Engineering XI Sanitary and Hydraulic Engineering.	4	Civil Engineering XII Railroad Engineering.	4
Electrical Engineering X D. and A. C. Machinery.	3	Civil Engineering XX Thesis.	3
Economics I (*b*) Elements of Political Economy.	3	Electrical Engineering X D. and A. C. Machinery.	3
Religion IV[2] Catholic Teaching.	1	General Law Lectures	1
		Economics I (*b*) Elements of Political Economy.	3
		Religion IV[2] Catholic Teaching.	1

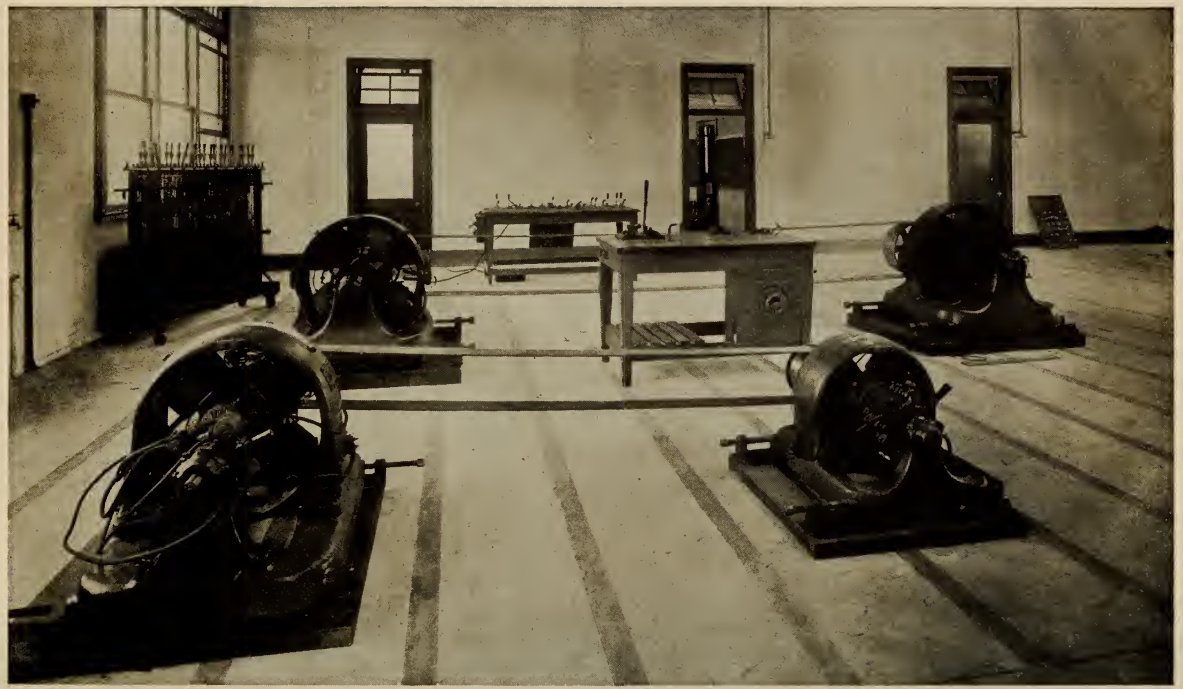
Total credits for the year.....24

VIII. BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

FIRST YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics II Trig., Adv. Alg. and Anal. Geom.	5	Mathematics II Trig., Adv. Alg. and Anal. Geom.	5
Chemistry I General Chemistry.	6	Chemistry I General Chemistry.	6
Drawing I Mechanical Drawing.	4	Drawing II Machine Drawing.	2
Mechanical Engineering I Pattern Shop.	4	Drawing III Freehand Drawing.	1
English I (*a*) Theory of Rhetoric.	2	Mechanical Engineering II Foundry.	4
English I (*b*) Outline Hist. of Eng. and Am. Lit.	1	English I (*a*) Theory of Rhetoric.	2
French I, German I, or Spanish I[1] Elementary Course.	3	English I (*b*) Outline Hist. of Eng. and Am. Lit.	1
Religion II[2] The Divinity of Christ.	1	French I, German I, or Spanish I[1] Elementary Course.	3
		Religion II[2] The Divinity of Christ.	1

Total credits for the year.....25½



Dynamo Laboratory

SECOND YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics IV Calculus, Elementary Course.	4	Mathematics IV Calculus, Elementary Course.	4
Physics I General Theoret. and Exp. Physics.	5	Physics I General Theoret. and Exp. Physics.	5
Mechanics I Theoretical Mechanics.	3	Mechanics I Theoretical Mechanics.	3
Drawing IV Descriptive Geometry.	4	Mechanical Engineering IV Machine Shop.	4
Mechanical Engineering III Forge Shop.	4	English II (*b*) Versification.	1
English II (*a*) English Prose Composition.	1	English II (*c*) History of English Literature.	1
English II (*c*) History of English Literature.	1	English II (*d*) Special Study of Chaucer and Spenser.	1
English II (*d*) Special Study of Chaucer and Spenser.	1	Philosophy I Introduction to Philosophy.	3
Philosophy I Introduction to Philosophy.	3	Religion II[2] The Divinity of Christ.	1
Religion II[2] The Divinity of Christ.	1		

Total credits for the year.....25

THIRD YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics V Calculus, Advanced Course.	4	Mechanics III Applied Mechanics.	4
Mechanics III Applied Mechanics.	4	Physics VI Magnetism and Electricity.	3
Physics VI Magnetism and Electricity.	3	Civil Engineering X Theoretical Hydraulics.	3
Electrical Engineering I Direct Current Machinery.	6	Electrical Engineering II Alternating Current Circuits.	6
Mechanical Engineering VII Mechanism.	3	Mechanical Engineering IX Engines and Boilers.	4
Religion IV[2] Catholic Teaching.	1	Mechanical Engineering X Steam Engineering Laboratory.	1½
		Mechanical Engineering XII Hydraulic Engineering Laboratory.	1½
		Religion IV[2] Catholic Teaching.	1

Total credits for the year.....22½

FOURTH YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Electrical Engineering III. Alternating Current Machinery.	6	Electrical Engineering III. Alternating Current Machinery.	6
Electrical Engineering IV (A) Design of D. C. Machinery.	3	Electrical Engineering IV (B) Design of A. C. Machinery.	3
Electrical Engineering V. Primary and Secondary Batteries. / Electrical Engineering VIII. Electric Wiring of Buildings.	2	Electrical Engineering VI. Electric Power Transmission and Distribution.	1
Electrical Engineering IX. Electric Railways.	1	Electrical Engineering VII. Telephone and Telegraph.	1
or		or	
Electrical Engineering XII. Illumination Engineering.	1	Electrical Engineering XI. Electric Power Plant Engineering.	1
Mechanical Engineering XI. Steam and Gas Laboratory.	3	Electrical Engineering XX. Thesis.	2
Mechanical Engineering XIV. Thermodynamics.	3	General Law Lectures	1
Economics I (*b*). Elements of Political Economy.	3	Economics I (*b*). Elements of Political Economy.	3
Religion IV[2]. Catholic Teaching.	1	Religion IV[2]. Catholic Teaching.	1

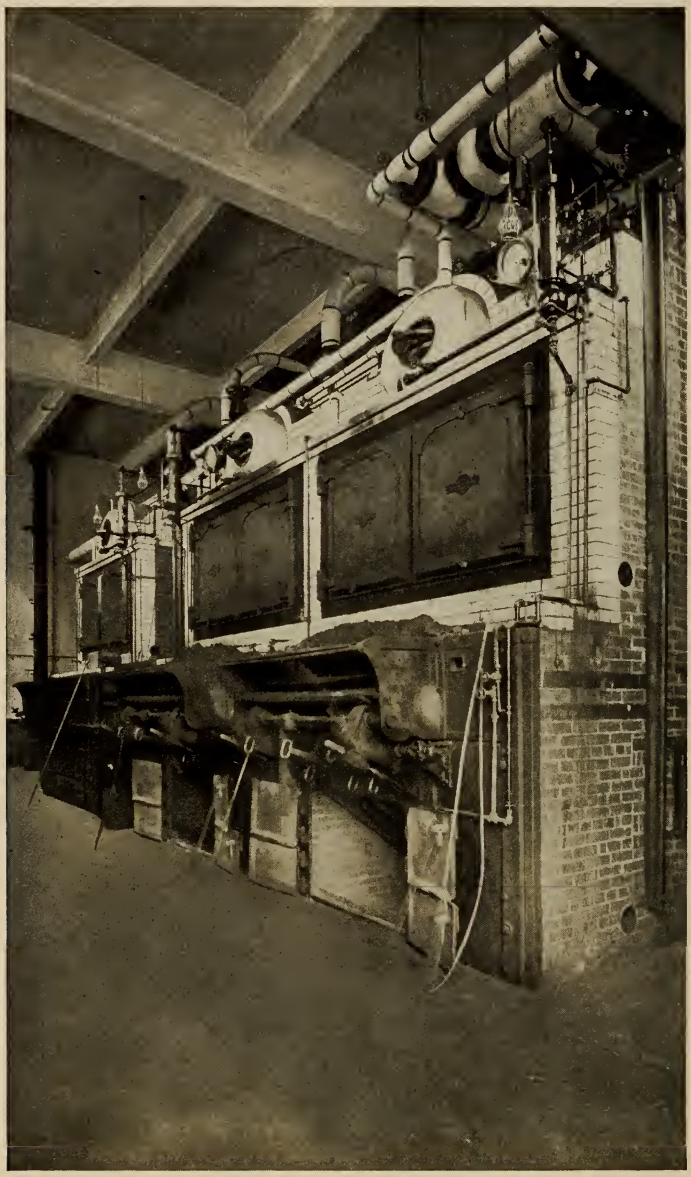
Total credits for the year.....20

IX. BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

FIRST YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics II. Trig., Adv. Alg. and Anal. Geom.	5	Mathematics II. Trig. Adv. Alg. and Anal. Geom.	5
Chemistry I. General Chemistry.	6	Chemistry I. General Chemistry.	6
Drawing I. Mechanical Drawing.	4	Drawing II. Machine Drawing.	2
Mechanical Engineering I. Pattern Shop.	4	Drawing III. Freehand Drawing.	1
English I (*a*). Theory of Rhetoric.	2	Mechanical Engineering II. Foundry.	4
English I (*b*). Outline Hist. of Eng. and Am. Lit.	1	English I (*a*). Theory of Rhetoric.	2
French I, German I, or Spanish I[1] Elementary Course.	3	English I (*b*). Outline Hist. of Eng. and Am. Lit.	1
Religion II[2]. The Divinity of Christ.	1	French I, German I, or Spanish I[1] Elementary Course.	3
		Religion II[2]. The Divinity of Christ.	1

Total credits for the year.....25½



Boiler Room

SECOND YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics IV. Calculus, Elementary Course.	4	Mathematics IV. Calculus, Elementary Course.	4
Physics I. General Theoret. and Exp. Physics.	5	Physics I. General Theoret. and Exp. Physics.	5
Mechanics I. Theoretical Mechanics.	3	Mechanics I. Theoretical Mechanics.	3
Drawing IV. Descriptive Geometry.	4	Mechanical Engineering IV. Machine Shop.	4
Mechanical Engineering III. Forge Shop.	4	English II (*b*). Versification.	1
English II (*a*). English Prose Composition.	1	English II (*c*). History of English Literature.	1
English II (*c*). History of English Literature.	1	English II (*d*). Special Study of Chaucer and Spenser.	1
English II (*d*). Special Study of Chaucer and Spenser.	1	Religion II[2]. The Divinity of Christ.	1
Religion II[2]. The Divinity of Christ.	1		

Total credits for the year.....23½

THIRD YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Mathematics V. Calculus, Elementary Course.	4	Chemistry VIII. Mineralogy, Metallurgy and Assaying.	3
Chemistry VIII. Mineralogy, Metallurgy and Assaying.	3	Mechanics III. Applied Mechanics.	4
Mechanics III. Applied Mechanics.	4	Civil Engineering V. Materials of Construction.	2
Mechanical Engineering VII. Mechanism.	3	Civil Engineering X. Theoretical Hydraulics.	3
Mechanical Engineering VIII. Machine Design.	4	Mechanical Engineering VIII. Machine Design.	4
Philosophy I. Introduction to Philosophy.	3	Mechanical Engineering IX. Engines and Boilers.	4
Religion IV[2]. Catholic Teaching.	1	Mechanical Engineering X. Steam Engineering Laboratory.	1½
		Mechanical Engineering XII. Hydraulic Engineering Laboratory.	1½
		Philosophy I. Introduction to Philosophy.	3
		Religion IV[2]. Catholic Teaching.	1

Total credits for the year.....24½

FOURTH YEAR

FIRST HALF-YEAR		SECOND HALF-YEAR	
Subject	Half-credits	Subject	Half-credits
Electrical Engineering X	3	Electrical Engineering X	3
D. C. and A. C. Machinery.		D. C. and A. C. Machinery.	
Mechanical Engineering XI	3	Mechanical Engineering XIII	2
Steam and Gas Engineering Laboratory.		Heating, Ventilating and Refrigerating Engineering Laboratory.	
Mechanical Engineering XIV	3	Mechanical Engineering XV	3
Thermodynamics.		Thermodynamics, *Second Course.*	
Mechanical Engineering XVI	5	Mechanical Engineering XVI	5
Engine and Boiler Plant Design.		Engine and Power Plant Design.	
Mechanical Engineering XVII	2	Mechanical Engineering XVII	2
Seminar.		Seminar.	
Economics I (*b*)	3	Mechanical Engineering XX	3
Elements of Political Economy.		Thesis.	
Religion IV[2]	1	General Law Lectures	1
Catholic Teaching.		Economics I (*b*)	3
		Elements of Political Economy.	
		Religion IV[2]	1
		Catholic Teaching.	

Total credits for the year.....21½

[1] and [2] See notes at bottom of page 42.

Gibbons Hall

RELIGIOUS INSTRUCTION

The University, as a Catholic institution, provides systematic and thorough instruction in the principles of faith and morals, and uses every effort to develop character in its students, and make them strong, earnest men of enlightened faith and studious habits. A high standard of manhood and industry is maintained, and students who are unwilling to meet it are rigidly excluded from the University.

Daily association with a large body of Catholic teachers and fellow students is in itself a safeguard for their Catholic faith and principles, while the temptations and moral perils incident to student life are greatly diminished amid surroundings strictly Catholic. Besides the prescribed courses in Religion, announced under the Faculty of Philosophy, frequent religious instruction is given in the chapels of the residence halls of the University, also a short annual retreat for all lay students.

THE CHAPELS

THE CALDWELL HALL CHAPEL

This Chapel, which forms an integral part of Caldwell Hall, contains nineteen altars, at which the Holy Sacrifice is offered daily by the priests who reside in Caldwell Hall. For the present it also serves as the University Church, in which all professors and students may attend the exercises and discharge the duties of religion.

THE GIBBONS HALL CHAPEL

This Chapel is intended primarily for lay students residing on the grounds. There are several masses each morning, instruction Sunday morning by the President of the Hall, and frequent addresses by the Rector of the University.

UNIVERSITY COLLEGES

In order to give systematically the instruction in Religion, and to apply the Rules of Discipline effectively, the Constitutions prescribe a class of institutions under the control of the University, known as University Colleges, and require that students shall reside in them, unless other provisions be made in particular cases. These colleges are managed by officers under rules laid down by the Board of Trustees.

ALBERT HALL, GRADUATES HALL AND GIBBONS HALL

The lay students of the University, unless dwelling in the families of their parents or guardians, or elsewhere with the special permission of the Rector, must reside in Albert Hall, Gibbons Hall or Graduates Hall. They are under the personal supervision of the Presidents of these Halls, respectively, with whose directions in regard to matters concerning their life at the University they are expected to comply; and they are required on every occasion, whether at the University or elsewhere, to behave themselves as Christian gentlemen. All Catholic students must conform to the laws of the Church in reference to attendance at Mass and the reception of the Sacraments.

The rates per month for each student for room and board are as follows:

Board: in the Dining Room of Graduates Hall		$25.00
Rooms: in Albert Hall; Single rooms	$10, $11,	12.50
	Double room and study (for two), for each occupant	8.50
	Same, somewhat larger, for each occupant	12.00
in Gibbons Hall; Single rooms	$12, $15	18.00
	Same, with bath	20.00
	Double rooms, without bath, for each occupant	12.00
in Graduates Hall	Prices will be given later.	

For students who, as contemplated by the Constitution, may need to reside elsewhere than at the University and who can not reside at their own homes, a list of approved private residences from which to select is provided.

No student may reside or board in any house not approved by the University authorities, unless it be his own home, or change his residence without giving immediate notice to the Vice-Rector.

Wherever students may reside they are subject to the rules of the University relating to studies, morals and general conduct.

Albert Hall

AUXILIARIES TO THE DEPARTMENTS

THE LIBRARY

Rev. William Turner, S.T.D., *Librarian.*
Mr. Joseph Schneider, *Assistant Librarian.*

Each department of the University is provided with a library containing the standard works and the current literature which the student needs in special lines of research. Besides the department libraries, of which there are ten, the Central Library, numbering some 80,000 volumes, includes works of reference and periodicals of a general character. These are all located, for the present, in McMahon Hall. The Reading Room offers every facility for consultation and study. The catalogues are arranged according to the Dewey Decimal system of classification and the department of bibliography is well developed. The stack rooms are furnished throughout with the latest model of fireproof shelving and glass flooring and are provided with movable electric lights. About four hundred periodicals and reviews are received by the Library and placed at the disposal of the students.

THE GENERAL MUSEUM

Very Rev. Henry Hyvernat, S.T.D., *Curator.*

This Museum includes at present the following collections:

The Wilcox Collection of fossils and minerals, presented in 1889-90;

The Oriental Collection of manuscripts, tablets and coins, donated in 1889 by Professor Hyvernat;

The Lindesmith Collection of Indian War relics, presented in 1893 by Rev. E. W. J. Lindesmith, Chaplain U. S. A., subsequently enriched by numerous paintings on wood from the California Missions, and by specimens of pottery, the gift of Dr. Octerlong, of Louisville, Ky.

The Jannet Collection of coins and medals, about 1700 in number, donated by M. Claudio Jannet, of Paris.

THE CHEMICAL LABORATORY

Very Rev. John J. Griffin, Ph.D., *Director.*

The rooms of half of the third and fourth floors of McMahon Hall are occupied by this Laboratory. The equipment is described in the statement of the Department of Chemistry.

THE CHEMICAL MUSEUM

Very Rev. John J. Griffin, Ph.D., *Curator.*

The Chemical Museum, occupying a large room on the fourth floor of McMahon Hall, contains collections which serve to illustrate inorganic and organic chemistry. In it are found, in well-arranged cases, the various ores from which the metals are obtained, and the latter in various stages of refinement; typical compounds prepared by students working in the laboratories; and a very large collection of samples of the crude and refined products of chemical industry received from manufacturing chemists in all parts of the United States and Europe.

THE PHYSICAL LABORATORY

Daniel W. Shea, Ph.D., *Director.*

The Physical Laboratory occupies several rooms on the first floor and in the basement of McMahon Hall, all pleasantly located, and supplied with gas, water, steam, electricity, blast and vacuum connections, and other conveniences for rapid and satisfactory work. The equipment, which is already considerable, represents the best productions of the leading instrument makers of the world. Additions are being made as rapidly as is consistent with careful selection. A large workshop supplied with steam power, machines and tools, and in charge of an instrument maker of long experience, gives excellent opportunity for the quick manufacture of special pieces of apparatus.

Reading-Room

THE APPLIED MECHANICS LABORATORY

Louis H. Crook, B.S., *Director.*

The laboratory occupies several large rooms in the basement of McMahon Hall and is supplied with motive power, compressed air, and vacuum pipes, gas, water, etc. The equipment includes: one 20,000-lb. Riehle testing machine; one 2,000-lb. Fairbanks cement testing machine; several hand-power testing machines and many instruments of precision.

THE ASTRONOMICAL OBSERVATORY

Very Rev. G. M. Searle, C.S.P., Ph.D., *Honorary Director;* Alfred Doolittle, A.B., *Director.*

The Observatory is situated on the highest point of the University grounds. Its equipment at present consists of an equatorially-mounted telescope of nine inches aperture, a meridian circle, a sidereal clock, a chronograph, chronometers, etc.

THE BIOLOGICAL LABORATORY

John B. Parker, A.M., *Director.*

A part of the third floor of McMahon Hall is occupied by this Laboratory. All the ordinary apparatus required for regular class work, as well as for carrying on investigation, is included in the equipment.

THE HERBARIUM

John B. Parker, A.M., *Curator.*

The Herbarium contains several thousand sheets of specimens obtained partly by purchase and partly by donation. Among the collections are those presented in 1891 by Rev. A. B. Langlois (Flora of Louisiana); in 1895 by Rev. J. H. Wibbe (European plants mounted); in 1907 by Mr. Frederick J. Braendle (Flora of the District of Columbia, Maryland and Virginia, and a valuable mycological collection).

THE ELECTRICAL ENGINEERING LABORATORY

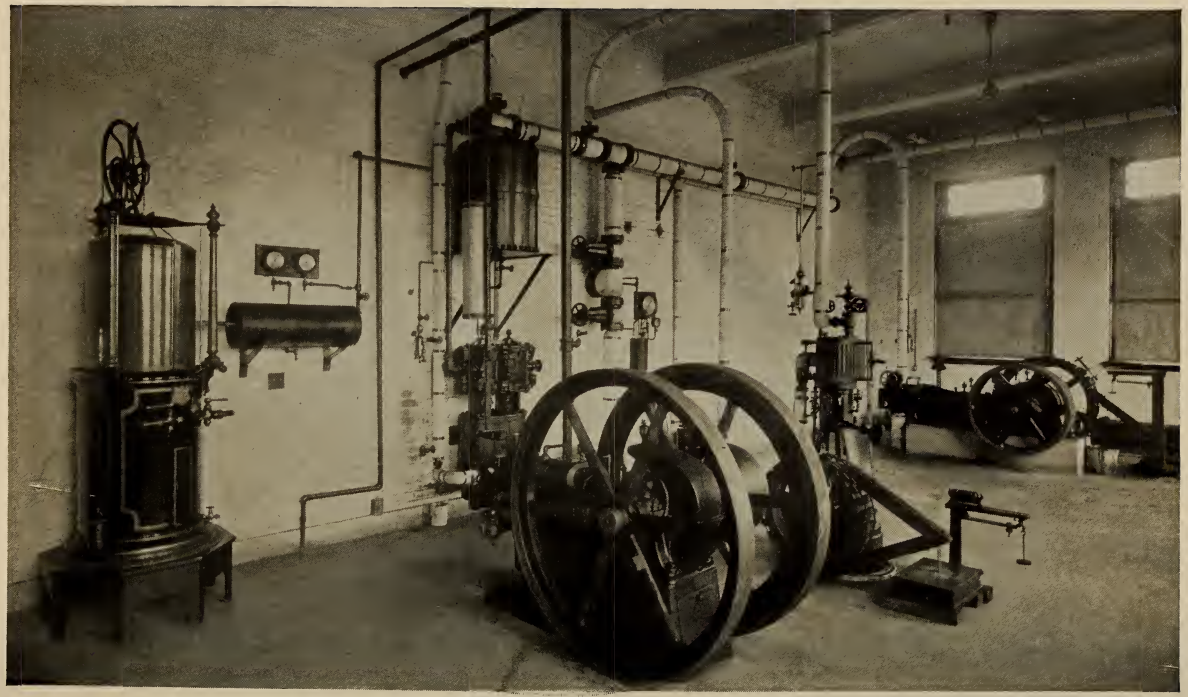
GEORGE F. HARBIN, E.E., *Director.*

The second floor of the new Engineering Building is largely occupied as a laboratory for Electrical Engineering. The equipment is described in the statement of the Department of Electrical Engineering.

THE MECHANICAL ENGINEERING LABORATORY

GEORGE A. WESCHLER, M.E., *Director.*

There are two distinct laboratories: the Mechanical and Steam Laboratory, and the Hydraulic Laboratory. These occupy five large rooms in the new Engineering Building. The laboratory equipment is described in the statement of the Department of Mechanical Engineering.



Steam Engineering Laboratory

UNIVERSITY PUBLICATIONS

THE YEAR-BOOK

The *Year-Book* is published annually, in April. It contains full lists of officers, professors, instructors and students of the University, courses of instruction, requirements for degrees, etc. Copies will be mailed to interested parties on application to the Registrar.

THE ANNOUNCEMENTS OF FACULTIES

These are: *Excerpta e Constitutionibus propriis Sacrarum Scientiarum Scholae in magno Americanorum Lyceo, cum Instructionibus pro iis qui honorum gradus apud hanc Scholam prosequuntur* of the Faculty of Theology; *Announcements of the School of Law; Announcements of the School of Sciences.* Copies will be mailed to interested parties on application to the Registrar.

THE ANNUAL REPORT OF THE RECTOR AND TREASURER

Published as the November number of the Catholic University Bulletin.

THE CATHOLIC UNIVERSITY BULLETIN

The Catholic University Bulletin is issued monthly from October to July. It contains articles on the subjects treated in the various Departments of the University, studies on education, book-reviews, and the current history of the University. It was first issued in January, 1895, and is now in its eighteenth volume. Subscription: three dollars yearly. Single numbers, forty cents. Address: The Catholic University Bulletin, Washington, D. C.

THE CATHOLIC EDUCATIONAL REVIEW

The *Review*, published under the direction of the Department of Education, deals with educational problems and methods from the Catholic standpoint and supplies information regarding all current events and movements in which the teacher is interested. The first number was issued in January, 1911. The *Review* is published monthly except July and August. Annual subscription, three dollars. Single numbers, thirty-five cents. Address: The Catholic Education Press, 1326 Quincy St., Brookland, D. C.

THE UNIVERSITY SYMPOSIUM

The *Symposium*, issued monthly from October to June, serves as a medium for publishing news of student activity at the University. It aims to develop in the students an interest for literary endeavor. The editors are from the student body. Subscription: two dollars a year. Address: The University Symposium, Brookland, D. C.

SOCIETIES

THE DEBATING SOCIETY

The Debating Society, open to all lay students of the University, is organized for the purpose of enabling the students to acquire facility and proficiency in public speaking. Meetings are held bi-weekly at which subjects for the public monthly debates are chosen, and various topics pertaining to University life are discussed.

At the end of each scholastic year a debate is held between the six most competent speakers, chosen from previous contests, and a cash prize, donated by Washington merchants, is awarded to the victors. The subjects for debate and other matters of interest, are announced from time to time on the University bulletin boards.

Heat Laboratory

ATHLETICS

A temporary building fitted for athletic exercise and indoor sports is conveniently located on the grounds.

Athletic Field, near the center of the grounds, serves for games and contests held at the University.

A golf-course, handball courts and tennis courts are also situated on the University property.

Student athletic organizations are: Base-ball, foot-ball and basket-ball associations, and the track-team.

FEES, EXPENSES, SESSIONS

FEES AND EXPENSES

The annual fee for tuition is one hundred dollars, payable semi-annually in advance. Laboratory expenses are not included in tuition fees. The graduation fees are: for the degree of Bachelor, ten dollars; for the degree of Master or Engineer, fifteen dollars; for the degree of Doctor, twenty-five dollars.

The expenses for board and lodging need not exceed thirty-five dollars per month. Expenses for books, laboratory supplies, etc., will depend upon the courses which the student may pursue.

SESSIONS

The academic year begins Tuesday, September 29, 1914, and ends on Graduation Day, Wednesday, June 16, 1915. It is divided into Fall, Winter, and Spring Terms by short recesses, at Christmas and Easter. The semi-annual examination period divides the year into First Half-Year and Second Half-Year.

The Christmas recess begins Tuesday, December 22, 1914, and ends Tuesday, January 5, 1915.

The Easter recess begins Tuesday, March 30, 1915, and ends Thursday, April 8, 1915.

KNIGHTS OF COLUMBUS GRADUATE SCHOLARSHIPS

These Scholarships, which pay tuition, board and room during the academic year, are awarded by competitive examination to lay students who have already attained the degree Bachelor of Arts, Bachelor of Science or their equivalent, and whose course of study leads to Masters' or Doctors' degrees in subjects other than Medicine or Theology. For full particulars concerning these Scholarships, see the Year Book.

EXAMINATIONS

The semi-annual examination period in 1915 begins Tuesday, January 25, and ends Wednesday, February 3.

For further information concerning the work of this School, apply to the Dean of the Faculty of Sciences.

For copies of the Year-Book, or for copies of the Announcements of the other Schools of the University, address the Registrar.

REGISTER OF STUDENTS OF SCIENCES
1913-1914

CANDIDATES FOR ADVANCED DEGREES

The Department in which occurs the principal subject of the student, as a candidate for the degree Engineer, Master or Doctor, is indicated by *italics;* work in other Departments is indicated by Roman type.

NAME	YEAR OF ENTRANCE	HOME RESIDENCE
Bast, Rev. Victor August, S.S.,	1908.	*Catonsville, Md.*
A.B. (St. Mary's University, Baltimore, Md.), 1904; S.T.B. (ibid.), 1908.		
Department: *Chemistry.*		
Crook, Louis Henry,	1906.	*Brookland, D. C.*
B.S. (The Catholic University of America), 1909.		
Departments: *Physics;* Mathematics; Sociology.		
Da Cruz, Rev. Daniel, O.F.M ,	1911.	*Washington, D. C.*
Departments: *Biology;* Chemistry.		
Greer, John James,	1908.	*Washington, D. C.*
B.S. (The Catholic University of America), 1912.		
Departments: *Physics;* Mathematics; Electrical Engineering.		
McGrail, Aloysius John,	1913.	*Cambridge, Mass.*
A.B. (Harvard University), 1913.		
Department: *Chemistry.*		
McIntyre, Rev. Roderick Kennedy,	1909.	*Antigonish, Nova Scotia.*
B.S. (The Catholic University of America), 1910.		
Department: *Chemistry.*		
Rice, Joseph Nelson,	1913.	*Weymouth, Nova Scotia.*
A.B. (St. Francis Xavier's College, Antigonish, N. S.), 1910; M.A. (ibid.), 1912.		
Departments: *Mathematics;* Mechanics; Physics; German.		

CANDIDATES FOR BACCALAUREATE DEGREES

The course leading to a baccalaureate degree followed by the student is indicated in *italics* after his name. *A* indicates the bachelor of arts course; *Am.* the bachelor of arts preparatory to medicine course; *S* the bachelor of science course; *Ch.* the bachelor of science in chemical engineering course; *Arch.* the bachelor of science in architecture course; *Arch. E.* the bachelor of science in architectural engineering course; *C* the bachelor of science in civil engineering course; *E* the bachelor of science in electrical engineering course; *M* the bachelor of science in mechanical engineering course.

FOURTH YEAR

Baumer, Joseph Lichtlin,	*Arch.*	1909.	*Brookland, D. C.*
Beall, Everett Stanton, Jr.,	*Arch.*	1910.	*Washington, D. C.*
Bohn, August Joseph,	*C*	1908.	*Washington, D. C.*
Burda, Frank Xavier,	*E*	1911.	*San Antonio, Texas.*
Crosson, George Leon,	*S*	1910.	*Asbury Park, N. J.*
Currin, John Alexander,	*C*	1910.	*Baltimore, Md.*
Lannon, Thomas Ryder,	*E*	1910.	*Pensacola, Fla.*
Maillard, Albert Ludovic,	*E*	1910.	*Trinidad, B. W. I.*
Robinson, Charles Jabel,	*Arch.*	1909.	*Washington, D. C.*
Swift, Harold Augustus,	*C*	1911.	*Scranton, Pa.*
A.B. (St. Thomas College, Scranton, Pa.), 1911.			
Valade, Ernest Augustus,	*E*	1909.	*Randolph Center, Vt.*
Waldeck, Henry John,	*C*	1910.	*Warren, Ohio.*
Welsh, John Thomas,	*C*	1911.	*Philadelphia, Pa.*

THIRD YEAR

Brunett, Adrian Labille,	*M*	1911.	*Rockville, Md.*
Byrne, Joseph Vincent,	*A*	1911.	*Washington, D. C.*
Cammack, John Edmund,	*E*	1911.	*Washington, D. C.*
A.B. (Mount St. Mary's College, Emmitsburg, Md.), 1911.			
Corridon, Joseph Bernard,	*C*	1910.	*Washington, D. C.*
Degen, George Leo,	*C*	1911.	*Washington, D. C.*
Dooling, Clarence Robert,	*C*	1911.	*Denver, Colo.*
Druhan, John Lawrence,	*C*	1911.	*Brooklyn, N. Y.*
Dugan, John Aloysius,	*M*	1912.	*Washington, D. C.*
Feild, Frank Allen,	*Ch.*	1911.	*Little Rock, Ark.*
Furey, William Henry,	*S*	1910.	*Ansonia, Conn.*
Gutierrez, Ernesto Roman,	*C*	1910.	*Mexico City, Mexico.*
Hornig, Philip Henry,	*C*	1911.	*Washington, D. C.*
Lambert, John Raymond,	*S*	1910.	*Trenton, N. J.*
Lynch, Martin Edwin,	*E*	1911.	*Manassas, Va.*
Magill, Thomas Howard,	*E*	1911.	*Seneca Falls, N. Y.*
May, Maurice Saul,	*Arch.*	1912.	*Washington, D. C.*
A.B. (Mount St. Mary's College, Emmitsburg, Md.), 1912.			
McCarron, John Elmore,	*C*	1910.	*Lynchburg, Va.*
McManus, Henry Edward,	*C*	1911.	*Lynn, Mass.*
Murphy, Edward Aloysius,	*E*	1910.	*Washington, D. C.*
O'Donnell, Jeremiah Francis,	*E*	1910.	*Washington, D. C.*
O'Neill, Robert Joseph,	*Arch.*	1910.	*Washington, D. C.*
O'Reilly, Charles Joseph,	*E*	1911.	*Washington, D. C.*
O'Shea, William Doyle,	*C*	1912.	*Fort Smith, Ark.*
Page, Eugene Ferdinand,	*M*	1912.	*Brooklyn, N. Y.*
Seltzer, Warren Ray,	*Arch.*	1911.	*Washington, D. C.*
Shepard, Philip Willard,	*Ch.*	1911.	*Washington, D. C.*
Trumbull, Mark Milton,	*C*	1911.	*Washington, D. C.*
Zachary, Robert Yancey, Jr.,	*S*	1910.	*Baltimore, Md.*

SECOND YEAR

Ahern, William John,	*E*	1913.	*Washington, D. C.*
Alex, Nicholas Francis,	*C*	1912.	*Albany, N. Y.*
Bond, John Aloysius,	*Arch. E*	1912.	*Brookland, D. C.*
Butler, William Verlin,	*C*	1911.	*Wallingford, Conn.*
Cleary, Leo Joseph Hayes,	*E*	1912.	*Ansonia, Conn.*
Coughlin, Robert Emmet,	*C*	1912.	*Washington, D. C.*
Coughlin, William Joseph,	*C*	1912.	*Norwich, Conn.*
Crummey, James Michael,	*C*	1912.	*Albany, N. Y.*
Deisch, Noel John,	*Am.*	1912.	*Barton, Ark.*
Dobson, Francis Kiernan,	*S*	1911.	*New Britain, Conn.*
Dykes, John Henry,	*A*	1914.	*Lebanon, Kansas.*
Edwards, Charles Eugene, Jr.,	*C*	1912.	*Washington, D. C.*
Fitzgerald, Richard Cotter,	*C*	1911.	*Washington, D. C.*
Geyer, Ferdinand Henry,	*E*	1912.	*Washington, D. C.*
Gibson, Arthur Joseph,	*E*	1913.	*Scranton, Pa.*
A.B. (St. John's College, Washington, D. C.), 1912.			
Grant, Paul,	*E*	1912.	*Midland, Md.*
Haaren, John Henry, Jr.,	*Arch.*	1911.	*Brooklyn, N. Y.*
Heine, Gregor Hermann,	*M*	1912.	*Berlin, Germany.*
Horn, Carl August,	*E*	1912.	*Catonsville, Md.*
Hornig, William Francis,	*E*	1913.	*Washington, D. C.*
A.B. (St. John's College, Washington, D. C.), 1913.			
Kehoe, George Aloysius,	*E*	1912.	*Albany, N. Y.*
Kelly, George Bernard,	*E*	1912.	*Burke's Garden, Va.*
Kelly, James George,	*C*	1912.	*Tazewell, Va.*

Lee, Robert,	*Ch.*	1912.	*Bridgeport, Conn.*
Levitan, Barnum Arthur,	*C*	1912.	*Washington, D. C.*
Mahan, Edward Joseph,	*E*	1912.	*West Point, N. Y.*
McGeady, James Augustine,	*E*	1912.	*Wanamie, Pa.*
Mulloney, Lawrence Edmund,	*M*	1912.	*Portland, Me.*
O'Connell, James, Jr.,	*E*	1912.	*Washington, D. C.*
Ryan, William Jerome,	*C*	1911.	*Wharton, N. J.*
Smith, John Francis,	*C*	1911.	*West Winfield, N. Y.*
Sullivan, Arthur George,	*Am.*	1912.	*Northampton, Mass.*
Walker, Robert Craighead,	*Arch. E*	1912.	*Washington, D. C.*

FIRST YEAR

Bagley, John Joseph,	*Ch.*	1913.	*Providence, R. I.*
Bennett, Howard Francis,	*Ch.*	1913.	*West Albany, N. Y.*
Bergen, Ralph David,	*S*	1913.	*Canton, Ohio.*
de Bettencourt, Manuel Andrew,	*E*	1913.	*Oak Bluffs, Mass.*
Buckley, William Francis,	*C*	1913.	*Washington, D. C.*
Burke, Frank David,	*S*	1913.	*Norwich, Conn.*
Burke, Paul Revere,	*Am.*	1912.	*Morristown, N. J.*
Callahan, John William,	*E*	1913.	*Hartford, Conn.*
Cartwright, Paul Joseph,	*Am.*	1913.	*Ellwood City, Pa.*
Cecil, William Franklin,	*E*	1913.	*Great Mills, Md.*
A.B. (Mt. St. Joseph's College, Baltimore, Md.), 1913.			
Cheves, Gilbert Xavier,	*C*	1913.	*Atlanta, Ga.*
Clegg, Raymond Vincent,	*E*	1913.	*Brooklyn, N. Y.*
Coffey, William Francis,	*C*	1913.	*Highland Falls, N. Y.*
Connor, Thomas Smith,	*Am.*	1913.	*Greensburg, Pa.*
Coronado, Daniel,	*C*	1913.	*Bogotá, Colombia.*
Coyne, William Joseph,	*M*	1912.	*Muskegon, Mich.*
Delahunt, Edward Nolan,	*M*	1913.	*Washington, D. C.*
Doherty, Neil Bernard,	*C*	1913.	*Cambridge, Mass.*
Dolan, John Richard,	*C*	1913.	*Warren, Ohio.*
Donovan, Edward John,	*Am.*	1913.	*Langdon, N. Dak.*
Doyle, Dennis Walter,	*C*	1913.	*West Winfield, N. Y.*
Driscoll, William Phelan,	*Am.*	1913.	*Ansonia, Conn.*
Eberly, Henry William,	*Ch.*	1913.	*Brookland, D. C.*
Eckert, John Paul,	*Ch.*	1913.	*Washington, D. C.*
Evans, James Ambrose,	*Am.*	1913.	*La Crosse, Wis.*
Fenton, Clement Beaven,	*Am.*	1913.	*New Bedford, Mass.*
Ferguson, Hugh Edward,	*E*	1913.	*Charlestown, Mass.*
Ferrall, James Patrick, Jr.,	*E*	1913.	*Montgomery, Ala.*
Fields, Edwin Simon, Jr.,	*C*	1913.	*Dorchester, Mass.*
Foley, Charles Francis Xavier,	*Ch.*	1913.	*Philadelphia, Pa.*
Forbes, Cyril Patrick,	*Am.*	1913.	*Paterson, N. J.*
Galleher, Harry Ernest, Jr.,	*Arch. E*	1913.	*Washington, D. C.*
Galvin, William Francis,	*M*	1913.	*Waterbury, Conn.*
Gloster, Arthur Leslie,	*E*	1913.	*Winsted, Conn.*
Goodwin, Charles Laracy,	*C*	1913.	*New York, N. Y.*
Gorman, Stephen Ambrose,	*M*	1913.	*Washington, D. C.*
Graw, Howard Paul Joseph,	*E*	1913.	*Knoxville, Tenn.*
Gutierrez, Luis,	*C*	1913.	*Mexico City, Mex.*
Horn, George Joseph,	*M*	1912.	*Catonsville, Md.*
Hutchinson, William Thomas,	*S*	1913.	*Waterbury, Conn.*
Idail, John Murray,	*M*	1913.	*Nat'l Soldiers Home, Va.*
La Rose, Edmond Spensley,	*M*	1913.	*Albany, N. Y.*
Manning, William Thomas,	*Am.*	1913.	*Youngstown, Ohio.*
Marr, William Walter,	*C*	1913.	*Washington, D. C.*

McCarron, Dennis Donovan,	*Am.*	1913.	*Lynchburg, Va.*
McCarty, John Edward,	*Ch.*	1913.	*Dover, N. H.*
McDonough, Edward Francis,	*M*	1913.	*Washington, D. C.*
McMullen, James Leo,	*E*	1913.	*Poughkeepsie, N. Y.*
Miller, Charles Philip, Jr.,	*Am.*	1913.	*Mt. Vernon, N. Y.*
Moynihan, Patrick Joseph Hanafin,	*C*	1913.	*Holyoke, Mass.*
O'Brien, Charles Vincent,	*C*	1913.	*Washington, D. C.*
Ostergren, George Anthony,	*M*	1913.	*Brooklyn, N. Y.*
Paschalis, Edward George,	*E*	1913.	*Washington, D. C.*
Peck, Vincent Sylvester, Jr.,	*E*	1913.	*Washington, D. C.*
Pellettiere, Stephen George,	*C*	1913.	*Brooklyn, N. Y.*
Phaneuf, Maurice Philippe,	*S*	1913.	*Nashua, N. H.*
Roche, Walter William,	*Arch.*	1913.	*Far Rockaway, N. Y.*
Rouleau, Louis Thomas,	*Arch.*	1913.	*Washington, D. C.*
Silk, Arthur Thomas,	*C*	1913.	*Roxbury, Mass.*
Smith, Francis Joseph,	*C*	1913.	*Providence, R. I.*
Smith, Vincent Joseph,	*Am.*	1913.	*New Britain, Conn.*
Somers, Edward Patrick James,	*A*	1913.	*Easton, Pa.*
Stark, Frederick Ryan,	*C*	1913.	*Dover, N. J.*
Studds, Robert Francis,	*C*	1912.	*Washington, D. C.*
Sweeney, James Joseph,	*C*	1913.	*Washington, D. C.*
Thibodeau, Ernest Joseph,	*E*	1913.	*Milltown, Mont.*
A.B. (St. Mary's College, Van Buren, Me.), 1913.			
Tracey, John Joseph,	*C*	1913.	*Philadelphia, Pa.*
Trotter, Charles Henry,	*C*	1911.	*Washington, D. C.*
Tucker, Robert James,	*Arch. E*	1913.	*Mt. Clemens, Mich.*
Waters, Paul Vincent,	*E*	1912.	*Germantown, Pa.*
Whalen, Joseph Patrick,	*M*	1912.	*Washington, D. C.*
Wick, Francis Winfred,	*E*	1912.	*Washington, D. C.*
Willinger, Raymond Michael,	*E*	1912.	*Baltimore, Md.*
Wright, John Patrick,	*E*	1912.	*Washington, D. C.*
Wright, Paul Joseph,	*E*	1913.	*Albany, N. Y.*
Wrightsman, Philip Gunckel,	*Ch.*	1913.	*Washington, D. C.*

STUDENTS IN SPECIAL COURSE OF TWO YEARS IN ARCHITECTURE

Morse, Daniel Boone Clarke,	1913.	*Valley View Farm, D. C.*
Murphy, Joseph Anthony,	1912.	*Westbury, N. Y.*
Turner, William Wirt,	1911.	*Barboursville, W. Va.*

SPECIAL STUDENTS

Borden, Thomas Gregory,	1913.	*Brookland, D. C.*
Byrne, Henry Herbert,	1913.	*Washington, D. C.*
Cockrell, Herbert Courtland,	1909.	*Washington, D. C.*
Daly, John Patrick,	1912.	*Washington, D. C.*
A.B. (St. John's College, Washington, D. C.), 1912.		
Howley, Bro. Francis Ambrose, O.P.,	1913.	*Washington, D. C.*
Howser, Harry Rutlege, Jr.,	1912.	*Washington, D. C.*
Mallan, William Roderick,	1912.	*Washington, D. C.*
Marsden, Thomas James,	1910.	*Washington, D. C.*
O'Dea, William Aloysius,	1912.	*Washington, D. C.*
A.B. (St. John's College, Washington, D. C.), 1912		
O'Rourke, Lawrence Joseph,	1914.	*Warren, Ohio.*
Repetti, Edward James,	1913.	*Washington, D. C.*

Simpson, William Francis,	1913.	*Washington, D. C.*
Valenzuelo, Pomposo,	1914.	*Mexico City, Mex.*
Welsh, Bro. Thomas Joseph, O.P.,	1913.	*Washington, D. C.*
Wilson, Henry Goering Francis,	1913.	*Washington, D. C.*

SUMMARY

Candidates for advanced degrees	7
Candidates for Baccalaureate Degree: Fourth Year	13
Third Year	28
Second Year	33
First Year	76
Students in Special Course of two years in architecture	3
Special students	15
Total science students	175
Students from other faculties	36
Total students taking science studies	211

CLASSIFICATION OF STUDENTS BY DEGREE COURSES

Degree Course.	Graduate.	Fourth Year.	Third Year.	Second Year.	First Year.	Special.	Totals.
Ph. D. in Mathematics.	1						1
Ph. D. in Chemistry.	3						3
A. M. in Physics.	2						2
Ph. D. in Biology.	1						1
A. B.			1	1	1		3
A. B. Prep. to Medicine.				2	12		14
B. S.		1	3	1	4		9
B. S. in Chemical Engineering.			2	1	7		10
B. S. in Architecture.		3	2	1	2	3	11
B. S. in Architectural Eng.			1	2	2		5
B. S. in Civil Engineering.		5	10	11	21		47
B. S. in Electrical Engineering.		4	6	12	17		39
B. S. in Mechanical Engineering.			3	2	10		15
Unclassified.						15	15
Totals.	7	13	28	33	76	18	175

Simpson, William Francis, 1913, Washington, D. C.
Wakeman, Florence, 1914, Lafayette Co., Miss.
Wales, Bro. Thomas Joseph, O.D., 1913, Washington, D. C.
Wilson, Henry Gosling Francis, 1913, Washington, D. C.

SUMMARY

Candidates for advanced degrees 7
Candidates for Baccalaureate Degree, Fourth Year 15
Third Year 18
Second Year 7
First Year 10
Students in Special Courses (not leading to a degree) 3
Special students 14
Total, different students 175
Total, counting students in more than one class 171

CLASSIFICATION OF STUDENTS BY STATES

	Graduate	Fourth Year	Third Year	Second Year	First Year	Special	Total
Alabama	1						1
Arkansas	1						1
California	2						2
Colorado	1						1
Connecticut							
Delaware							
District of Columbia		1	2				3
Florida							
Georgia							
Idaho							
Illinois			1				1
Indiana							
Iowa							
Kansas							
Kentucky							
Louisiana							
Maine							
Maryland		1	1				2
Massachusetts							
Michigan							
Minnesota							
Mississippi							
Missouri							
Montana							
Nebraska							
Nevada							
New Hampshire							
New Jersey							
New Mexico							
New York							
North Carolina							
North Dakota							
Ohio							
Oklahoma							
Oregon							
Pennsylvania							
Rhode Island							
South Carolina							
South Dakota							
Tennessee							
Texas							
Utah							
Vermont							
Virginia							
Washington							
West Virginia							
Wisconsin							
Wyoming							
Alaska							
Hawaii							
Porto Rico							
Philippine Islands							
Canada							
Mexico							
Cuba							
Argentina							
Brazil							
Chile							
China							
Japan							
Turkey							
Total							